EXPLORING OCCUPATIONAL HEALTH IN THE CONTEXT OFPRECARIOUS WORK: A CASE STUDY OF WORKERS IN UNORGANIZED E-WASTE SECTOR IN THE SLUMS OF BHOLAKPUR WARD OF HYDERABAD DISTRICT

Ph.D. THESIS

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Clearance was obtained from the Institutional Ethics Committee for carrying out the study.

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APPROVAL OF THESIS

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Knowledge emerges only through invention and re-invention, through the restless, impatient, continuing, hopeful inquiry human beings pursue in the world, with the world and with each other – Paulo Freire

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ABBREVIATIONS

AP	Andhra Pradesh
ASHAs	Accredited Social Health Activists
AYUSH	Ayurveda, Yoga & Naturopathy, Unani, Siddha & Homeopathy
BOCW	Building and Other Construction Workers
CAA	Citizenship Amendment Act
CHW	Community Health Worker
CMP	Common Minimum Program
CPCB	Central Pollution Control Board
DGFASLI	Directorate General Factory Advice Service and Labour Institute
EEE	electrical or electronic equipment
EPTRI	Environment Protection Training and Research Institute
ESI	Employees' State Insurance Act
ESIC	Employees' State Insurance Corporation
E-waste	Electrical and electronic waste
FNCL	First National Commission of Labour
GST	Goods and Services Tax
IEC	Institutional Ethic Committee
ILO	International Labour Organization
IMF	International Monetary Fund
IT	Information and Technology
KKPKP	Kagad Kach Patra Kashtkari Panchayat
LMICs	Low- and middle-income countries
MO	Medical Officer
MoEFCC	Ministry of Environment, Forest, and Climate Change
MoHFW	Ministry of Health and Family Welfare
MoLE	Ministry of Labour and Employment
Mt	Million metric tons
NAC	National Advisory Council
NCEUS	National Commission for Enterprises in the Unorganized sector

NCRL	National Commission on Rural Labour
NCSEW	National Commission on Self-employed Women and Women Workers
NGOs	Non-governmental organizations
NHP	National Health Policy
NPSHEW	National Policy on Safety, Health and Environment at Workplace
NRC	National Register of Citizens
NUHM	National Urban Health Mission
OPEC	Organization of Petroleum Exporting Countries
OSH	Occupational safety and health
PPE	Personal Protective Equipment
PPP	Public-private partnership
SEWA	Self-Employed Women's Association
SNCL	Second National Commission of Labour
ST/SC	Schedule Tribes/ Schedule Caste
StEP	Solving the E-Waste Problem
TRG	Technical Resource Group
TSPCB	Telangana State Pollution Control Board
TT	Tetanus Toxoid
TU	Tuberculosis Unit
UN	United Nations
UNU	United Nations University
UPHC	Urban Primary Health Center
WFCs	Worker Facilitation Centres
WHO	World Health Organization
WPR	What's the Problem Represented to be?
WTO	World Trade Organization

SYNOPSIS

Work in the unorganized sector is precarious, however, being a heterogeneous entity one could observe a graded precarity among various types of unorganized sector. The unorganized waste processing sector in general and the e-waste processing sector, in particular, could be examples of unorganized sectors with extreme precarity.

The precarity in the unorganized waste processing sector is characterized by fuzzy or absent employment relationships, small or undefined workplaces, unsafe and unhealthy working conditions, absent work-related social security, low levels of skill and productivity, low or irregular income, and long working hours. Waste processing in the unorganized sector is confined largely to the urban slums of developing economies with a workforce comprising mostly of members of low caste and Muslim community. The workers are neither recognized, registered, or protected, nor are their working conditions regulated under national labor legislation and social protection schemes. The prevalent precariousness makes workers vulnerable to occupational injuries and work-related diseases. The erosion of general public health services, which ideally includes these preventive and regulative services side by side with the curative and rehabilitative components, means that there is no place for these individuals to turn for their healthcare needs. They may seek expensive private healthcare to get immediate relief so that they can return to work more quickly. The existing research on occupational health, to a larger extent, has utilized a biomedical lens that focuses on the immediate exposures and behavioral aspects of workers. This narrow focus fails to consider the larger political and social determinants of occupational health.

The rationale of this study is based on the ground that the development model has accentuated the precarious work. While it was anticipated that the unorganized sector would vanish with due course of time, it is the same sector that employs a majority of the population (80.9%). The waste management sector reflects one such sector where despite the presence of legal regulations, waste lands up in the precarious unorganized sector providing livelihood to millions. Similar is the story of e-waste, 90% of which ends up in the unorganized sector employing a million people. Hence,

the present study attempts to explore the occupational health of workers working in the unorganized e-waste processing sector in the slums of Hyderabad, which is rapidly evolving as one of the leading technology hubs in India, by utilizing the political economy approach.

The study had the following objectives:

(1) To explore the occupational health problems and healthcare-seeking practices of adult male workers currently engaged in e-waste processing in the unorganized sector of Bholakpur ward of Hyderabad district.

(2) To explore the employment and working conditions of adult male workers currently engaged in e-waste processing in the unorganized sector of Bholakpur ward of Hyderabad district

(3) To understand the context in which policies on occupational health, focusing on unorganized sector workers, have evolved in India

The study utilized Macro-social theoretical framework by Muntaner et al. as well as Micro-structural framework proposed by Benach et al. to devise the conceptual framework with the following components – historical background of the place, occupational safety and health policies, employment conditions, working conditions, occupational health problems, healthcare-seeking practices, healthcare system, economic conditions, and socio-demographic characteristics. The study employed an exploratory case study approach which consisted of two components – (a) a sequential exploratory mixed-methods design (equal status), (b) standalone qualitative design. The data collection was carried out in two main phases (Phase I and Phase II) between March 2019 to March 2020. I started with a qualitative exploration to understand the context (Phase I) which also resulted in the development of a structured interview schedule for phase II which was a cross-sectional survey. Simultaneously, I also reviewed the policy documents as well as interviewed relevant stakeholders to analyze the relevant policies. The policy analysis was carried out using the 'What's the problem represented to be?' approach. The study was approved by the Institutional Ethics Committee (IEC) (IEC Number – 1330). The entire analysis was guided by the conceptual framework.

Until a few decades ago, Bholakpur was one of the epicenters for leather export. The tanning work was primarily looked after by the members of the Muslim as well as

the Scheduled Caste communities. The leather industry suffered a severe blow in the late 1980s due to macro-level policy changes compelling the workers to pick up scrap work, with e-waste being one of them.

The work was predominantly carried out by local young Muslim males (40% of them were 24 years or less). A majority had 10 or fewer years of schooling (68%), poverty emerged to be the main reason for the interruption of their education. They joined this work through networks of friends and family who had previously or were currently working with e-waste indicating the intergenerational nature of this work.

Workers were predominantly self-employed (64.8%) either alone or working with their family members or friends in unregistered units (98%). The median number of working days was six but 14.5% reported working for all days in a week with Friday as a half working day. The median number of hours of work on a full working day was nine with approximately 17% reported working for ten or more ten hours on a full working day. There was a difference in wages which lay in a range of 7000-12000 INR per month. The wages depended on – the number of working hours per day, experience in processing e-waste, and working with chemicals. They learned to work with e-waste either by observing someone (58.13%) or by themselves (28.46%) with a small percentage (13.41%) reported working under someone else before starting their own business. 30% of them reported the provision of safety equipment by the employers. Workers in half of the units reported having bandages and antiseptics (57%), however the same could be observed only in a few units. A majority (73.5%) reported their employers taking care of their immediate healthcare expenses in case of any serious injury or health problems arising out of the work. However, they were not provided with paid leave. Many of them were enrolled in the government health insurance scheme however they never utilized it because the scheme was only for in-patient care. They (other than those who process wires and that too, not all) did not have any organization to represent their voice.

A majority of them (96.35%) were working in rented units that were cramped with no additional facility for ventilation other than the entrance. Dismantling along with stripping/burning of wires/cables were reported to be the commonest (40%) waste processing activities, a couple of them (1%) also reported using chemicals to extract metals. They reported using the following equipment - hammer, chisel, screwdriver,

paper-cutter, knife, blade. Also, a machine was utilized to strip the wires but only a few could afford it because of its cost (40,000 INR). The wires/cables were burned outside the city to avoid pollution in the area. However, on a couple of occasions, I observed them burning the e-waste in/nearby their units. A majority (65%) reported never using any personal protective equipment (PPE) while working whereas 31% mentioned using it sometimes with gloves (63%) being the commonest one. However, I could hardly observe three or four among them with gloves (woolen gloves) in my entire data collection period. There was a consensus among workers that no safety equipment was required for doing this work. Repeated bending of the neck as well as repeated movement at the wrist while breaking e-waste was the commonest movements observed. A majority (56%) reported bending and lifting heavy objects such as a bundle of thick wires (telephone cable), refrigerator, washing machine, etc. at the workplace at least once every day on an average working day.

The following were the commonest occupational health problems reported which workers could relate to their work :(a) Injury - 17% of workers reported having an injury in the past two weeks whereas 41% had reported encountering it in the past two years preceding the study. They categorized injuries as ‘normal’ or ‘severe’. The injuries are so common that they care only when these are "severe", (b) Musculoskeletal trouble - 45% of workers reported any of the three-neck trouble, shoulder trouble, low back trouble - in the past one month preceding the study. Low back trouble emerged as the commonest (55%) musculoskeletal problem, (c) Skin problems - 13% reported skin problems in the past one month preceding the study with itching being the commonest one.

Workers approached a private or a charitable healthcare provider only when they felt the particular problem to be “serious”. Good treatment by the healthcare providers, trust between the workers and healthcare providers, nearby location of the clinics, and convenient timings emerged as the reasons for seeking healthcare in private and charitable clinics. However, none reported availing healthcare services from any of the two Urban Primary Health Centers (UPHCs), and the reasons that emerged included – these were addressing the healthcare needs of women and children, inconvenient functional timings and waiting time, non-availability of medicines, and

inappropriate behavior by the healthcare providers. Only 15% reported attending any health camps in the past six months.

A majority (91%) of those, who reported encountering injury at any point in time, consulted a private healthcare provider in the vicinity. Interestingly, one practice that was almost universal for those requiring medical care for injuries was the use of TT injections. A majority (67.7%) reported having it in the last six months out of which 57.8% reported getting it once, 32.5% reported getting it twice, 5.5% reported getting it thrice, 0.6% reported getting it four times whereas 3.6% reported getting it six times either from a private clinic or a charitable clinic. The doctors from the private and charitable clinics recognized that such frequent TT injections were not warranted. However, they continued to prescribe the injections for several reasons including the lack of records, quality of the injections available, workers' belief system as well as their memory. One of the common justifications was that if they do not give the injection someone else would or that the workers insist on having the injection – with the providers merely complying. Almost one-third of the workers with low back trouble reported consulting any healthcare provider out of which again a majority (82.3%) went to private healthcare providers. 'Hijama' emerged as one of the cultural practices particularly for low back pain and shoulder pain. For their skin problems (itching/rashes) they resorted to hand washing, bathing, or applying coconut oil.

The main policy documents which were expected to deal with occupational safety and health of workers included: National Policy on Safety, Health, and Environment at workplace (NPSHEW, 2009), National Health Policy (NHP, 2017), and Telangana e-waste management policy, 2017. Other relevant documents included - The Unorganized Sector Workers' Bill, 2004; the Unorganised Non-Agricultural Workers' Conditions of Work and Social Security Bill, 2007; The Unorganised workers' social security act, 2008; National Urban Health Mission, 2013 and E-waste rules, 2016.

The actions/interventions suggested in the key policy documents were thematically organized under four domains – (i) strengthening of implementation machinery (ii) characteristics of work situation (iii) training (iv) awareness creation

Problematizations - (a) a problem of inadequate implementation of existing laws and regulations on occupational safety and health in all economic activities, (b) lack of training and awareness among workers.

Possible underlying assumptions – (a) there exists an 'inclusive system' which caters to occupational safety and health of all workers in all economic activities, (b) occupational safety and health as 'individual responsibility' of workers

Possible reasons for the emergence of the problematizations – (a) occupational safety and health laws and regulations are for workers with employment relationship, (b) workers with fuzzy or absent employment relationship have never been taken care of since the historical times and with the neoliberal regime there is no possibility of them being taken care off

Possible silences underlying the problematizations – (a) workers without employment relationship are not recognized, (b) promotive and preventive aspect of healthcare are missing.

The existing studies have largely relied on studying the role of chemicals/toxins as well as workers' behavior in understanding occupational health problems. However, increasingly it has been recognized that precarious work (determined by the employment and working conditions) affects the workers' health. Hence, it becomes important to explore occupational health in the context of precarious work as approximately 80% of people in India are employed in an unorganized sector where precarity is prevalent.

The key entry points for the discussion are, then, how to explain the occupational health problems and healthcare-seeking practices of the workers who work with e-waste and who were getting only curative healthcare services from the private and charitable clinics with UPHCs remained indifferent to their healthcare needs. This is important because these workers are located right at the heart of the city, a city that has been recognized for one of the best living standards in India. Also, one could observe a decent distribution of public healthcare systems nearby their living and working area – two UPHCs, one ESI dispensary, and one tertiary care center.

The existing literature has highlighted that in LMICs precarious work leads to high rates of workplace illness and death due to the following five reasons - (a) where primary commodities and warmer climates are present, hazardous extractive

industries and agriculture figure predominantly in the overall picture; (b) work begins at an earlier age and extends later in life due to educational barriers, household income needs, and minimum social security; (c) in most LMICs there are fewer human and material resources – including inspectors, and safety and monitoring equipment – to prevent and treat job injuries; (d) hazardous jobs are increasingly outsourced to LMICs through subcontracting or subsidiaries; (e) in many LMICs there is weaker enforcement of labor and occupational safety and health laws in both domestic and foreign-controlled industries.

The same could be utilized to understand the occupational health problems encountered by the workers in the unorganized e-waste sector. This study has mapped the precarity in unorganized e-waste sector which included a predominance of self-employment, fuzzy employment relationship, work was predominantly carried out by young adult males who, in many cases, started working when they were adolescents, no paid leaves, long working hours, unequal wages, absence of work-related social security, absence of workers' organization, rented unit, cramped workspace without adequate ventilation and lighting, minimal/no use of safety equipment, no concept of good ergonomic practices. The existing occupational safety and health (OSH) regulations fail to cover the occupation where the employment relationship is either absent or fuzzy and hence workers in the unorganized e-waste sector are left to take care of their safety and health. As they are not recognized under any existing OSH regulations, they cannot seek healthcare from the designated healthcare facilities which are meant for workers with a clear employment relationship. The options left with them were the public healthcare system (UPHCs) and the private/charitable healthcare system in the vicinity. The unique practices of multiple TT injections, Hijama, and applying coconut oil were observed in response to injuries, musculoskeletal problems particularly low back trouble, and itching respectively. These practices may be seen as coping mechanisms, and thus an active choice for the workers in the context where the public healthcare system could not recognize their occupational healthcare needs and the private and charitable clinics were providing them with curative care. The non-recognition of their healthcare needs in general and occupational healthcare needs, in particular, by the urban primary healthcare system could be reflective of the macro-level processes which

have eroded the primary care services in the public health system, in general, even for the poor. It is in this context; the private and charitable clinics are addressing workers' healthcare needs.

The literature highlights that precarious work, occupational safety, and health regulations/policies, as well as the healthcare system, are products of the developmental model which emerges as a result of power relations at a macro-level. The continuous presence of precarious work in Bholakpur over the decades could be understood by utilizing Sanyal's concept of wasteland. Wasteland is a space, inhabited by the marginalized/dispossessed/excluded, created by the capitalist development in developing economies like India. Waste processing activities have been relegated to certain communities since historical times and this is deeply entrenched with the notion of 'purity and pollution'. Waste is considered 'impure' should be processed by the 'impure people'. Hence, it is always the low caste and Muslim communities who have been engaged with waste processing activities in India. A report by National Commission for enterprises in the Unorganized Sector (NCEUS) highlighted that while the Schedule Tribes (ST) and Schedule Caste (SC) populations are protected, to some extent by affirmative action, Muslims are overwhelmingly concentrated in the unorganized sector and in self-employed activities to meet their livelihood needs. The destruction of traditional work (leather business) caused by neoliberal forces and its replacement with the scrap work mirrors Sanyal's idea of rehabilitation of workers in the wasteland which is indispensable for capital's existence. The e-waste rules enacted a decade ago (with two subsequent amendments) underscore the need for authorization of the processing units by the state pollution control board (SPCB). However, the ground reality is different. More than 90% of domestically generated e-waste in India and Telangana ends up in an unorganized sector that is considered 'illegal'. It seems, then, while on the one hand, the state is pretending to rehabilitate these workers by providing them with mere conditions of existence, it does not want to recognize this work as an 'employment'. Its recognition as a form of employment would mean that the state is labeling this work as 'legal' whereas it's very own rules on e-waste management makes it 'illegal'. Recognizing this as legal would further mean that the workers' occupational health should be taken into consideration which would necessitate

appropriate policies/measures. However, considering them as a mere population of wasteland and provisioning them with facilities for survival privileges the state to not take into account their occupational health needs. Though alternate debates and discussions were happening since the late 1960s in the Ministry of Labour and Employment (MoLE) regarding the need to address the OSH of self-employed workers, the same failed to emerge as a policy. The subsequent national health policies framed by the Ministry of Health and Family Welfare (MoHFW) largely restricted itself to identifying injuries as the main occupational health problem. While NHP 1983 suggested expansion of ESI, NHP 2002 suggested screening for occupational diseases whereas NHP 2017 monitoring of worksites. These policies failed to take into account the precarity and the preventive and promotive aspect of healthcare which is crucial to prevent occupational health problems.

This study suggests that the occupational health of a marginalized community depends on multiple dimensions. One of the important contributions of the current study is the role of policies in addressing their OSH needs. The policies framed both by MoLE and MoHFW lack inclusiveness. Whereas the labor policies catered to OSH of workers with the employment relationship, the health policies could only recognize injuries and restricted to screening and workplace monitoring and awareness creation. This happened despite many alternative proposals were put forward by various groups. This reflects a certain way of thinking which is evident since colonial times that the unorganized sector is a temporary phenomenon and hence with the due course of developing their occupational health would be taken care of by the organized sector.

The workers in certain unorganized sectors such as the construction sector, beedi sector, solid waste processing sector were organized, though through years of struggle, and hence they started demanding their OSH needs which resulted in the formation of welfare boards. It would be interesting to explore whether it would be possible to organize the e-waste workers similarly.

In this study, I have been able to show the systematic neglect of their OSH needs in the policies despite many alternative discourses brewing. It would be important to find out why these alternative discourses failed to become part of policies.

Another important area to interrogate is the role of the healthcare system and labor system to ensure comprehensive healthcare for these workers, presently these two systems appear to work in silos.

CHAPTER 1: INTRODUCTION

1.1 Dimensions of occupational health

Occupational health is defined by the First Joint International Labour Organization (ILO)/World Health Organization (WHO) Committee on occupational health as "the promotion and maintenance of the highest degree of physical, mental, and social well-being of workers in all occupations; the prevention among workers of departures from health caused by their working conditions; the protection of workers in their employment from risks resulting from factors adverse to health; the placing and maintenance of the worker in an occupational environment adapted to his physiological and psychological equipment" (Jeyaratnam, 1992). Recent work by Benach et al. (2014) has complicated this definition by bringing into the picture the complex links between macro-social power relations, labour and welfare policies, employment and working conditions, health system, and the health and quality of life of workers. This complexity in the understanding of occupational health has emerged because of changing nature of employment conditions from stable to flexible across the globe, both in developed and in developing economies. The flexible form of employment sometimes referred to as precarious employment, is characterized by varying levels of job insecurity and deterioration of workers' employment and working conditions. The resurgence of interest in social determinants of health in the past three decades also underscores employment conditions (precarious employment) as a determinant of population (workers) health (Benach et al., 2014). In developed economies, employment conditions are guided by the laws, whereas in low- and middle-income countries (LMICs), including India, most employment agreements are unregulated (Anne-Emanuelle Birn, 2017). This contributes to increasing informal employment in both formal/organized and informal/unorganized sectors (Benach et al., 2014).

In India, approximately 80% of the workforce is employed in the unorganized/informal sector (International Labour Organization, 2018a). It is very well known that the unorganized sector has always been a predominant source of employment in India for decades. However, one cannot deny that the development model that has been followed has contributed to the emergence of new types of unorganized sectors with more flexible employment conditions in the urban slums which process hazardous waste, thereby adding another layer of risk to their already

existing precarity (Anne-Emanuelle Birn, 2017; Hodges, 2013). It is the policy that guides the creation and evolution of services. The policies/laws protecting workers health and ensuring their welfare which are formulated by the Ministry of Labor and Employment, both at the central level and the state level, however, remain largely confined to the type of work/occupation where a formal employment relationship obtains or where some stability in employment exists. This seems to be in the image of the organized sectors mainly and a few unorganized sectors such as construction work, beedi work, where historical processes have led to some progress in defining this relationship (Jhabvala, 2005). The policies/laws have provisions to ensure safe and healthy employment and working conditions as well as provision of social security and health insurance for the workers (National Commission for Enterprises in the Unorganised Sector, 2007). For instance, **The Factories Act** has clear directions on maintaining decent employment and working breach of which invites penalty. The factory workers seek healthcare services from hospitals run by the **Employees' State Insurance Corporation** (Saha, 2018). Similarly, construction workers have their welfare board who look after their employment and working conditions as well as provides for occupational healthcare services from the designated hospitals (Krishnamurthy and Nair, 2003). However, when it comes to the unorganized sector, and especially the waste processing sectors, where workers are mostly self-employed or where there exists obscured employment relationship, there does not exist any mechanism to ensure decent employment and working conditions (International Labour Organization, 2019; Madhav, 2010). Moreover, the workers are almost exclusively dependent on the locally accessible healthcare facilities, which are mostly private, for their occupational as well as general healthcare needs (Alfers, 2017). Workers in the unorganized electrical and electronic waste (e-waste) processing sector represent one such category where workers are mostly self-employed (Lundgren, 2012) and the subject of my inquiry in the current study.

1.2 Workers in the unorganized e-waste processing sector – an emerging precarious work

E-waste is one of the fastest-growing waste streams globally including India (Perkins et al., 2014). There is no standard definition of e-waste; in general, it consists of discarded electrical or electronic equipment (EEE) like laptops, computers, mobile phones, televisions, mp3 players and so on, by their users when they realize it is no longer useful or has reached the end of its life (Perkins et al., 2014).

In the past three decades, there has been an exponential growth in electrical and electronic equipment production and consumption contributed by increasing market penetration of products in India, development of replacement market in developed countries and a generally high product obsolescence rate together with a decrease in prices and the growth in internet use (Lundgren, 2012). This could be attributed to the economic reforms adopted by India since late 1980s (Hodges, 2013). While the advancement in science and technology is paramount for a country's development, it has its dark side too. It is the privileged section of the society which gets benefits out of this development model, while the marginalized section must bear the brunt of disadvantage. This could be understood from the fact that while the boom in the information and technology (IT) sector has benefitted one section of the society by providing relatively quality employment (however one cannot deny the presence of precarity even in the IT sector), the marginalized section is deriving its livelihood from its end product i.e., by processing e-waste in the unorganized sector under extreme precarious employment and working conditions (Lundgren, 2012). Something similar could be observed with bio-medical waste management (particularly plastic). Though Sarah Hodges did not focus on occupational health of workers who were processing medical garbage in unorganized/informal sector in Chennai, she did explain how the rise of bio-medical waste (plastic) since 1980s gave livelihood to informal sector workers in Chennai (Hodges, 2013).

The extraction of precious metals such as gold, copper, nickel, neodymium, dysprosium, praseodymium and so on, from e-waste and its processed materials is more economical and energy-saving than from direct mining (Awasthi and Li, 2017). This makes e-waste processing lucrative. The huge capital investment required to ensure the mandate to protect occupational safety and health of workers according to

international/national standards and regulations makes formal e-waste processing set-ups very costly in LMIC settings, being unsustainable at the currently possible profit margins. This results in e-waste ending up in the unorganized sector (Lundgren, 2012). Further since this sector does not formally fall under the purview of any law (for example as a scheduled employment) there is no mandate to follow any occupational safety and health regulations. Precarity in the unorganized e-waste processing sector is further heightened by the fact that most workers are self-employed or dependent operators (including those who may employ some labour, and with or without contributory family labour) who toil under deplorable employment and working conditions for their livelihood; the employment relationship, if any, is obscured and hence there does not exist any work-related social security either (Lundgren, 2012). A detail report by the National Commission for Enterprises in the Unorganized sector (NCEUS) published in 2007, stated that most workers continued to toil without any job or social security, working in the most miserable, unhygienic and unlivable conditions in the unorganized sectors. This was despite the promise that the reforms (of 1991) would improve socio-economic conditions and working conditions of poor and vulnerable workers. The report further highlighted that while the Schedule Tribes (ST) and Schedule Caste (SC) populations are protected, to some extent by affirmative action, Muslims are overwhelmingly concentrated in the unorganized sector and in self-employed activities to meet their livelihood needs (National Commission for Enterprises in the Unorganised Sector, 2007). This trend is reflected in the unorganized e-waste processing sector as well, where Muslims are overwhelmingly concentrated (Rathore, 2020).

According to the latest available estimates, globally, 53.6 million metric tons (Mt) of e-waste were discarded domestically in 2019, with India as the third largest generator (Forti et al., 2020). Owing to its hazardous nature, the Basel Convention, an International Treaty on the transboundary movement of hazardous waste and its disposal, mandates its scientific management (Lundgren, 2012). However, globally, out of the estimated 53.6 Mt, only 9.3 Mt (17.4%) was reported to be treated formally (Forti et al., 2020). It is important here to highlight that to ensure ‘scientific management of e-waste’, as prescribed by Basel Convention, and to curb the flow of

e-waste to the unorganized sector, the Ministry of Environment, Forest, and Climate Change (MoEFCC), Government of India, introduced e-waste rules in 2011 with subsequent amendments in 2016 and 2018 (Ministry of Environment and Forests, 2011; Ministry of Environment, Forest and Climate Change, 2018, 2016). Four hundred (400) formal e-waste dismantling/recycling units are currently functioning in the country (Central Pollution Control Board, 2021a), yet more than 90% of the domestically generated waste is being processed in the unorganized sector (Awasthi and Li, 2017). Hence, while the rules mandate formal/scientific processing of e-waste, the same is not practiced on the ground. Interestingly, the rules bring in the role of state labour department to recognise and register these workers and hence ensure their occupational safety and health (Ministry of Environment, Forest and Climate Change, 2016). However, by definition, the unorganized sector (less than ten workers) is not covered under any labour laws/regulations (National Commission for Enterprises in the Unorganised Sector, 2007) and it is the very same unorganized sector where the maximum amount of e-waste is getting processed (Ministry of Environment, Forest and Climate Change et al., 2017).

1.3 Occupational health problems among workers processing e-waste in the unorganized sector

The existing studies on workers processing e-waste in the unorganized sector have overwhelmingly utilized an environmental epidemiological lens to measure the presence of heavy metals and chemicals in the workers' body by collecting their biological samples (blood, urine, hair and others) (Feldt et al., 2014; Srigboh et al., 2016; Wang et al., 2011; Wittsiepe et al., 2017). They have summarized health consequences as biological disturbances (disturbance in thyroid hormone functioning, micronuclei in binucleated cells, DNA damage and so on) of harmful exposure (chromium, lead, cadmium, BFRs and so on) thus trying to locate problems within 'worker's body' (Grant et al., 2013). Though it is crucial to conduct these types of studies to understand how various metals and chemicals present in e-waste and the way it is being processed affect the biological processes, the studies appear to decontextualize these processes by isolating the workers' body from the larger context. However, more recently there is a shift in paradigm where researchers from other disciplines including public health are trying to locate workers' body into the

type of work and the context they are engaged with. These studies have reported injuries, Musculo-skeletal problems, respiratory problems, skin allergies among workers in the light of working conditions as well as have shed light on their healthcare seeking practices (Adusei, 2015; Akormedi et al., 2013; Ohajinwa et al., 2017; Pandey and Govind, 2014). However, these studies are limited in number as well as in scope. A few have focused on studying a health problem concerning immediate exposures, for instance, quantitatively finding the association between injuries and geographical association, age, use of safety equipment (Adusei, 2015; Ohajinwa et al., 2017), whereas others have qualitatively explored the unhygienic working conditions, health problems (predominantly injuries) (Akormedi et al., 2013; Pandey and Govind, 2014), and dependence of workers on private health sector for their healthcare needs (Asampong et al., 2015; Pandey and Govind, 2014). There is thus a move to situate occupational health in the larger macro-level context, which guides occupational safety and health policies, which in turn have a bearing on employment and working conditions and availability and accessibility of the healthcare system.

1.4 Rationale for the present study

While mainstream studies (both environmental epidemiological studies as well as public health studies) on occupational health have used biomedical lens and focused on injuries/toxin/ergonomics, more recent scholarly literature has shone a light on the issue of precarity and the way in which macro structure/politics/discourse constitute policy and influence the evolution of resulting institutions that have a bearing on occupational health (Benach et al., 2014). I, thus, sought to explore the occupational health of workers currently engaged in e-waste processing in the unorganized e-waste processing sector in Bholakpur ward of Hyderabad not from the traditional biomedical lens but by utilizing sociological lens.

1.5 Objectives of the study

The present study has the following objectives:

1. To understand the occupational health problems and healthcare seeking practices of workers currently engaged in e-waste processing of Bholakpur ward of Hyderabad district.

i. To explore the occupational health problems and healthcare seeking practices of workers currently engaged in e-waste processing in the unorganized sector of Bholakpur ward of Hyderabad district.

ii. To find the prevalence of occupational health problems and healthcare seeking practices of workers currently engaged in e-waste processing in the unorganized sector of Bholakpur ward of Hyderabad district.

iii. To explore and describe the employment and working conditions of workers currently engaged in e-waste processing in the unorganized sector of Bholakpur ward of Hyderabad district.

iv. To find the relationship

- between working conditions and occupational health problems
- between socio-demographic characteristics and occupational health problems
- between occupational health problems and healthcare seeking practices
- between socio-demographic characteristics and healthcare seeking practices

v. To explore the emergence of the unorganized e-waste processing sector with its relevance to occupational health in Bholakpur ward of Hyderabad district

2. To understand the context in which policies pertaining to occupational health, focusing on the unorganized sector workers, have evolved and shaped their occupational health in India

- To map out the existing labor policies (dealing with occupational safety and health) and welfare policies (health policy, social security policy) for unorganized sector workers and analyze the same to explore how the occupational health is evolved and conceptualized in India with respect to unorganized sector workers.

CHAPTER 2: LITERATURE REVIEW

2.1 Meanings of the term 'unorganized sector'

The terms organized/unorganized are used interchangeably with formal/informal (formal/informal terms are used internationally) and as such they are consistent with international definitions as recommended by the ILO (National Commission for Enterprises in the Unorganised Sector, 2007). International standards distinguish between employment in the unorganized/informal sector and unorganized/informal employment. Employment in the unorganized/informal sector is an enterprise-based concept and it is defined in terms of the characteristics of the place of work of the worker. The unorganized sector is a subset of unincorporated enterprises not constituted as separate legal entities independently of their owners. They are owned by individual household members or several members of the same or different households. Typically, they are operating at a low level of organization, on a small scale and with little or no division between labor and capital as factors of production. Unorganized/informal employment, on the other hand, is a job-based concept which is defined in terms of the employment relationship and protections associated with the job of the work. Own-account workers (without hired workers) operating an unorganized enterprise are classified as in unorganized employment. Similarly, employers (with hired workers) operating an unorganized enterprise are classified as in unorganized employment. In the case of employees, unorganized/informal employment is defined in terms of employment relationship. According to international standards, for a job held by an employee to be considered as unorganized, the employment relationship should not be, in law or in practice, subject to national labor legislation, income taxation, social protection or entitlement to certain employment benefits (International Labour Organization, 2018a). The underpinning reasons may be the non-declaration of the jobs of the employees, casual jobs or jobs of a short duration, jobs with hours of work or wages below a specified threshold (e.g., for social security contributions) or lack of application of law and regulation in practice. In practice, the organized or unorganized nature of a job held by an employee is determined based on operational criteria such as social security contributions by the employer (on behalf of the employee), and entitlement to paid sick leave and paid annual leave (International Labour Organization, 2018a). However, the similar conceptual as well as definitional clarity was lacking in Indian

context until 2004. The National Commission for Enterprises in the Unorganized Sector (NCEUS), which was constituted in 2004 to ensure welfare and well-being of workers in unorganized sector, examined and deliberated in detail about the issue and came up with separate definitions for unorganized/informal sector and unorganized/informal employment (National Commission for Enterprises in the Unorganised Sector, 2007). The unorganized sector consists of all unincorporated private enterprises owned by individuals or households engaged in the sale and production of goods and services operated on a proprietary or partnership basis and with less than ten total workers. The commission defined unorganized/informal employment as "Unorganized workers consist of those working in the unorganized enterprises or households, excluding regular workers with social security benefits, and the workers in the formal sector without any employment/social security benefits provided by the employers". Unorganized/informal employment can be in the unorganized sector, in the organized sector or in the household sector (National Commission for Enterprises in the Unorganised Sector, 2007). My focus in the current study is the unorganized/informal employment in one of the unorganized sectors i.e., the unorganized e-waste processing sector where workers are predominantly self-employed, the employment relationship, if any, is obscured.

Historically, the idea of informality (unorganized employment/sector) was first introduced by British Anthropologist Keith Hart in 1971 in his seminal paper 'Informal Income Opportunities and Urban Employment in Ghana' (Bromley, 1978) which subsequently led to the coining of the term 'informal sector' by the ILO following its employment mission to Kenya. The report extended the scope of the informal activity, which was earlier limited to only petty services provided by street vendors, cab drivers or porters in the railway station, to a wide range of manufacturing activities in which material goods were produced, such as furniture making, masonry, and carpentry. Hence, unorganized/informal economy constitutes a range of heterogenous economic activities. The ILO recognized the following to be the core characteristics of informal/unorganized sector: ease of entry; reliance on indigenous resources; family ownership of enterprises; small scale of operation; labor-intensive and adapted technology; skill acquired outside the formal school system; and unregulated and competitive activities (Sanyal, 2014a). Unorganized

waste processing sector in general and e-waste processing sector, in particular, is one such example where these characteristics are evident (Lundgren, 2012; National Commission for Enterprises in the Unorganised Sector, 2007).

2.2 Politics surrounding the use of term 'informal' over 'unorganized'

Nirmala Banerjee's influential study of women workers in the unorganized sector has deconstructed the two terms – unorganized and informal. She most often uses the term unorganized while the World Bank document uses the term 'informal'. Banerjee argues that the connotations of organization, that is, unionization for political and bargaining strength, formal work records, legal support, etc., which cluster around unorganized labor as negative concomitants are erased by using term which is capable of being seen almost as a lifestyle choice i.e.., "informal" sector (Srivatsan, 2012). Further, the notions of flexible schedules, working at pleasure, working at home are invariably highlighted as positive features of this sector, which are in fact more exploitative than anything else. The world bank document acknowledges the problem underlying the unorganized sector and attributes this to the protection of labour through unionization and positive legislation thus not favoring institutional support rather promoting free market solution in the form of small loans, support by NGOs, and other non-state measures (Srivatsan, 2012). These suggestions seem to have some connection with the history when even factory workers were minimally supported by the state. In the colonial and to an extent in the early post-colonial India, the urban factory workers, predominantly migrants, had to rely on informal welfare arrangements and mutual assistance provided by the rural households and social networks as well as by the industrial neighborhoods as the government sponsored or employer-supported social security system covering various uncertainties and problems was non-existent or was at most in its infancy. A few labour welfare organizations including trade unions also evolved however with limited activities (Das Gupta, 1994).

2.3 Trends in different forms of labor

Globally, in 2018, 61.2% of total employment was reported to be unorganized in nature out of which 51.9% was in unorganized sector. Though agriculture constituted significant proportion of unorganized employment, non-agricultural unorganized employment remained to 50.5% (International Labour Organization, 2018a). Unorganized employment was reported to be high in emerging (middle-income) and developing (low-income) economies. These economies, which represented 82% of the world employment, had 93% of the world's unorganized employment. When it comes to India informal/unorganized employment constituted 88.2% of the total employment, out of which 80.9% was reportedly concentrated in unorganized sector (International Labour Organization, 2018a) .

It was anticipated, post-independence, that with economic growth and development in India the unorganized sector would be subsumed by the organized sector (Kannan and Papola, 2007). However, the data tells a different story. The unorganized sector workforce after witnessing an increasing trend from 1983 to 1993-94 started declining afterwards. From close to 92.6% in 1993-94 the share of workforce in the unorganized sector declined to 83.6% in 2011-12 (Giri and Singh, 2017), and 80.9% in 2018 (International Labour Organization, 2018a). However, it is interesting to note that though workforce in the organized sector has shown a marginal rise, in reality the increase is among workers who are predominantly engaged in unorganized employment within the organized sector. Thus, it can be argued that precarity is only increasing (Srivastava and Naik, 2017).

2.4 Theories explaining existence, functioning and linkages of informal/unorganized sector (also economy) with the rest of the economy and the implications for occupational health

Early understanding of the informal/unorganised sector emerged from Lewis' model of labour market dualism. The model assumed economy to be dualistic in nature encompassing the following two sectors: (a) the formal, capitalist, industrial, modern and urban sector (b) the informal, subsistence, agricultural, traditional and rural sector characterised by the presence of surplus labour. It was hypothesized that the informal/traditional sector will be subsumed by the formal/capitalist sector with the due course of development as when capitalist sector expands, it extracts labour from

the traditional/subsistence sector due to wage differential. It was anticipated that the transfer of labour resources from the agricultural sector, to the modern industrial sector, where they create a surplus may be used for further growth and development. Hence, the model precluded the possibility of open unemployment in the modern sector and allowed for underemployment, only in the traditional sector (Sanyal, 2014b). However, it was found that in many less developed countries despite the positive marginal products in agriculture (which means there was increase in agricultural output with increasing investment in capital, land, labor force and raw materials) and significant levels of urban unemployment, workers continued to migrate to urban areas. This was explained by Harris and Todaro in 1970 in their model widely known as Harris-Todaro model. As per this model, the higher expected wage rate in the urban sector, even though unemployment was a reality, attracted the rural labour (with positive earnings in agriculture) to the urban parts despite the presence of open unemployment. An increase in industrial output and rise in labour demand would increase wage employment and, hence, unemployed migrant labourers would be absorbed by the industries. However, the rate of urbanization far exceeded that of industrialization and the problem of unemployment not only remained but escalated in the urban areas which subsequently induced the growth of informal/unorganized sector in urban areas (Sanyal, 2014a). Fields introduced the idea of an urban informal/unorganized sector where the growing number of migrants, unable to find a job in the formal sector, managed a living in the margins of the modern economy through unskilled, labour-intensive, poorly-paid jobs (often family-employed) with low level of productivity. Ranis-Stewart provided for the possibility of a modern component of the informal sector with dynamic linkages with the formal sector through subcontracting along with a traditional component, acting as a refuge for the otherwise unemployed (Laha, 2015). It is important to note the above mentioned models focussed primarily on the phenomenon of rural-urban migration than explaining the emergence of informal/unorganized sector. Marxists and Neo-Marxists viewed informal/unorganized economy as temporary phenomenon which was expected to vanish with the course of capitalist industrialisation and modernisation. They propounded that the informal/unorganized sector constituted the reserve army of labour which would be absorbed by the expansion of capitalism

(Laha, 2015). These models thus treated the 'unorganized/informal labour' as temporary. This has a bearing on occupational health as the labour laws/policies then are based on assumption with regarding to trends in employment conditions and employment relationships that do not in fact manifest. The simplistic assumption of unorganized sector being a transitory phenomenon may be hypothesized to have prevented the policy makers to devise occupational safety and health policies for the workers, taking into account the specific situation in the unorganized sector.

However, the post-colonial view of capitalist development posited by Kalyan Sanyal, deviates from the above mentioned approaches to capitalist development, by radically breaking from the historical materialist framework, that sees the process of history as a transition from a more backward mode of production (pre-capitalist) to a more advanced mode of production (capitalist). The Marxist view sees capitalism as an economic force that invades all economic spaces beyond its ambit and transforms all pre-existing modes of production. However, according to the post-colonial view, third world capitalism has its own unique dynamics, characterized primarily by economic heterogeneity. This economic formation does not adhere to the orthodox vision of capitalism that proceeds along an inevitable, unidirectional trajectory of historical transition. Instead, the economic formation in developing countries is traditionally seen as marked by the presence of both capitalist and non-capitalist means of production (Sanyal, 2014c). On the one hand, the process of primitive accumulation leads to the destruction of pre-capitalist sectors and on the other, it also produces a space that necessitates the recreation of those sectors. The space created by the process of primitive accumulation is referred to as a 'wasteland' and it is inhabited by those who are estranged from their means of production and who cannot find a place within the system of capitalist production. Hence, it is a space of the dispossessed, marginalised and excluded. The inhabitants of this space are different from the "reserve army of labour", waiting to be subsumed into the capitalist means of production. Instead, they constitute a surplus pool of labour power that cannot be brought within the domain of capitalist production and hence necessarily exist outside it (Sanyal, 2014c).

In order to legitimize capital's political and ideological conditions of existence, aligning with the relatively newer democratic and rights-based development

approaches, it is critical that this surplus pool of labour power be reunited with means of labour. This is necessary in order for them to subsist by engaging in economic activities outside the domain of capital and this decapitalisation of labour is referred to as reversal of primitive accumulation. This leads to the establishments of need economy (informal/unorganized sector), where the surplus pool of labourers is rehabilitated (Sanyal, 2014c). The government appears to rehabilitate these laborers by providing them with the bare minimal facilities under the rubric of welfare programs. However, the laborers equally use the mechanism of collective political mobilization and seek the help of political parties and leaders to ensure conditions for their survival. Partha Chaterjee has used the concept of political society to explain the strategies which the laborers in 'wasteland' adopt for their existence . He differentiates between civil society and political society by marking that people under the category of civil society are considered as 'citizens' by the state whereas those under political society are counted as 'population'. Unlike citizens who can claim rights in relation to the state, populations do not bear any inherent moral claim. Large sections of urban poor (which is referred as 'population') could not be treated as legitimate citizens because their habitation and livelihood are often premised on a violation of the law (Chatterjee, 2011). Hence, it is in this context one needs to understand why the workers cannot demand occupational safety and health from the state and why the state is not providing it. Wielenga in her paper has attempted to bring out the role of state in the creation of unorganized sector in South India from 1940 to 1960. She has examined the enactment of four laws in Madras Province in the late 1940s which were meant to protect workers. She argues that these laws were exclusionary in nature as they excluded workers from small unorganized industries such as beedi-making, arecanut-processing, handloom-weaving, and tanning from labour protection. This exclusion resulted from a complex struggle between employers, workers' unions, and the state (Wielenga, 2020).

Capitalist development in the post-colonial period, in developing economies such as India, has thus been conceptualised as a process that has both preserved and created non-capitalist forms of production (traditional sector/informal sector) in its course. Indian economic policy post-independence was largely geared towards national self-

sufficiency with a particular focus on large-scale import substituting industrialization and government regulation (regulation in terms of controls, quotas and licenses). Small-scale and cottage industries were protected, and incentives provided for setting up industries in economically less-developed regions. However, as India moved forward with the five-year plans, the budgetary allocation to large scale industries considerably exceeded that of the small-scale industries. By the time of the third plan, the planners decided on full-fledged planned industrialization as the way forward to counter unemployment (Sanyal, 2014b). Based on the assumption of Indian economy being dualistic in nature, the third plan openly acknowledged that the existence of non-capitalist, traditional labour-intensive sectors was only a transitional phase. This could have been one of the reasons for the lack of attention to the occupational safety and health of unorganized sector workers. The expectation was that such industrialization would accelerate the employment growth so that poverty could be substantially reduced. Strict labour regulations were in place for the welfare of working class in formal sectors. The expectation of the early planners, especially Jawaharlal Nehru, the first Prime Minister was that, India would be able to reap the benefits of industrialization without going through the pain and suffering caused by primitive accumulation (Sanyal, 2014b). However, the planned industrialization in India did not turn out to be very different from the colonial experience and despite the impressive growth of the modern sector, poverty persisted along with surplus labour (Sanyal, 2014b). It was argued that poverty, inequality, unemployment, and periodic economic crisis are due to misconceived state intervention, corruption, inefficiency, and misguided economic incentives (Chowdhury, 2021). It was suggested that India and other developing economies could overcome these by opening their market as free market would promote rapid economic growth and subsequently development. The period since late 1980s was marked by India's transition from a closed and controlled economy which was largely welfare oriented, to an open economy with economic growth as its primary goal. The restructuring of economy was propelled by the dominant global discourse of neoliberalism. Neoliberalism, also called as market fundamentalism is the successor of economic liberalism, the main tenets of which were outlined by Adam Smith in the eighteenth century. As per David Harvey, "neoliberalism is in the first

instance a theory of political economic practices that proposes that human well-being can best be advanced by liberating individual entrepreneurial freedoms and skills within an institutional framework characterised by strong private property rights, free markets, and free trade. The role of the state is to create and preserve an institutional framework appropriate to such practices (Ravindran et al., 2018).

Neo-liberal economic policies have propagated major global economic and political changes. These included the delinking of the US Dollar from the Gold Exchange Standard; the spiralling of oil prices following the formation of the Organization of Petroleum Exporting Countries (OPEC); and the resultant debt-crisis in many low and middle-income countries including India. The severe debt-crisis compelled the Indian government to ask help from International Monetary Fund (IMF) and World Trade Organization (WTO) (Ravindran et al., 2018). A series of structural adjustment policies were coerced over India and other developing economies in exchange of monetary help. These policies came to be as Washington Consensus and included the following – budget austerity and reduction in public spending by governments; trade and financial liberalisation; privatisation of state-run enterprises; deregulation or abolition of regulations such as tariffs and duties that impeded market entry; and facilitating foreign direct investment through various incentives including weakening regulations protecting labour rights. The Indian government agreed to these policies and finally opened up its economy in 1991 (Ravindran et al., 2018).

It was claimed by the Neoliberal theory that free market will lead to more individual freedom and well-being, and a more competent distribution of resources. It was postulated that economic reforms would accelerate the economic growth, as well as employment rate and wage in developing countries, following which working conditions and socio-economic circumstances of poor and vulnerable workers will improve (Giri and Singh, 2017). However, instead of improving employment and working conditions of workers in the unorganized sector, the reforms have added to their existing vulnerabilities by making them process waste including hazardous waste in the unorganized sector. For instance, Sarah Hodges in her work on bio-medical waste management in Chennai has explained the rise in bio-medical waste since late 1980s and its processing in the unorganized sector (Hodges, 2013).

Similarly, the existing literature on the e-waste management shows the link between rise in e-waste following the adoption of reforms and the booming of unorganized sector (Lundgren, 2012).

In summary, both mainstream and post-colonial theory acknowledge the presence of large unorganized sector. However, the mainstream sees this as temporary, and the post-colonial sees this as part of the design of the way capital evolves in LMICs wither way policy neglects the unorganized sector – though in different ways. Over and above this mainstream model, the introduction of the neo-liberal economic policy further encouraged the growth of the unorganized work with the persistence of the unorganized sector further leading to an increase in precarity.

2.5 Employment precariousness and occupational health

Employment precariousness, a relatively new concept, is a social determinant of health encompassing both employment and working conditions (Benach et al., 2014). There is no single definition of employment precariousness. It is identified as a multidimensional construct including but not limited to employment insecurity, individualized bargaining relations between workers and employers, low wages and economic deprivation, limited workplace rights and social protection, poor working conditions, and powerlessness of workers to exercise workplace rights (Benach et al., 2014) . While this concept is largely defined for informal employment or where an employer-employee relationship could be located, I have attempted to apply it to study the unorganized sector where self-employment is predominant. Though there also exists a few hired workers, the employment relationship is usually obscured. While having an employment relationship, to some extent, gives the legitimacy to hold employers or the state accountable, no such mechanisms exist for workers who are self-employed or where employment relationship is obscured and based on kinship ties or other social ties rather than a formal contract. This adds to a new dimension to their already existing precarious conditions. However, there exists a few examples where self-employed workers, through the help of civil society/trade unions, have organized themselves and Self-Employed Women's Association (SEWA) is one such example. It is national trade union for self-employed women workers from the informal economy (Self Employed Women's Association, 1988).

The research utilizing employment precariousness as a construct to study workers health have largely focused on workers who are informally employed in formal/organized sectors. A recent review has identified the historical, economic, and political factors that link precarious employment to health and health equity. The authors reviewed findings from five of the most informative approaches in social epidemiology – (a) major organizational restructuring and downsizing, (b) perceived job insecurity, (c) temporary employment, (d) multidimensional approaches to flexible employment and employment precariousness, and (e) welfare state regimes and national labor markets (Benach et al., 2014) . The studies reviewed by authors attempted to associate these various dimensions with health problems among workers which included physical as well as psychological ill-health along with the implications for occupational safety and health (Benach et al., 2014). Here, it is important to highlight that the studies included in the review were about workers in the organized sector though they were informally employed. It has been reported that precarious work in LMICs put workers at high risk of workplace illness and death. There are five reasons for this – (a) where primary commodities and warmer climates are present, hazardous extractive industries and agriculture figure predominantly in the overall picture; (b) work begins at an earlier age and extends later in life due to educational barriers, household income needs, and minimum social security; (c) in most LMICs there are fewer human and material resources – including inspectors, and safety and monitoring equipment – to prevent and treat job injuries; (d) hazardous jobs are increasingly outsourced to LMICs through subcontracting or subsidiaries; (e) in many LMICs there is weaker enforcement of labor and occupational safety and health laws in both domestic and foreign controlled industries (Anne-Emanuelle Birn, 2017). This indicates the increasing recognition of employment precariousness as a determinant of workers health which needs enquiry using sociological lens. However, the existing studies on occupational health have largely been carried out using biomedical lens. These studies are focused on finding the relationship between immediate workplace exposure (such as physical, chemical, biological, psychosocial, and ergonomic hazards) and workers' health problem. Interestingly, a series of chapters in a book titled 'Health, safety and well-being of workers in the informal sector in India' has gone beyond looking into immediate

exposures as determinants of occupational health and have made enquiry about employment and working conditions (Panneer et al., 2019). A few of them have also discussed the existing policies regarding their health and social security. While some chapters have focused on specific target population such as women, migrants and agricultural laborer's, others have addressed issues of migration, demography and age-cohorts (Panneer et al., 2019). However, the chapters seem to miss a comprehensive problematization of occupational health from a sociological lens encompassing employment precariousness.

2.6 Employment precariousness and occupational health of workers in the unorganized waste processing sector

One rapidly growing sector with a large number employed in precarious work is the unorganized waste processing sector. Millions of people worldwide, in developing economies including India, make a living collecting, sorting, recycling and selling valuable materials that someone else has thrown away which is called as 'waste' (Lundgren, 2012). The Central Pollution Control Board (CPCB) of India categorises waste into the following types: hazardous waste, municipal solid waste, biomedical waste, plastic waste, e-waste and construction and demolition waste (Central Pollution Control Board, 2021b). Though the existing rules strictly restrict processing of these waste by the formal/organized sector (Ministry of Environment, Forest and Climate Change, 2016), unorganized sector plays an indispensable role in its processing. For instance, more than 90% of e-waste generated in India finds its way to the unorganized sector (Awasthi and Li, 2017).

The unorganized waste processing sector is characterized by small or undefined workplaces, unsafe and unhealthy working conditions, no formal employer-employee relationship, low levels of skill and productivity, low or irregular income and long working hours. This is confined largely to the urban slums of developing economies where millions of urban poor, who have little or no formal training, make a living collecting, sorting and recycling waste. Workforce mostly comprise of children, marginalized population (ethnic or religious minorities) and migrants (Lundgren, 2012). Their involvement in the waste processing could be linked to their historical marginalization based on caste/religion along with the subsequent development model (Rathore, 2020). However, this is beyond the scope of my research and hence

I am not discussing it in detail here, it entails a separate enquiry. Workers are not recognized, registered, regulated, or protected under labor legislation and social protection (Lundgren, 2012). However, a few categories of workers have come together to form formed their organizations. For instance, Kagad Kach Patra Kashtkari Panchayat (KKPKP) is a member-based trade union of unorganized/informal scrap collectors in Pune, India (Samarth, 2014). However, the existence of such organization is scarce.

The existing literature has extensively described the health problems encountered by workers in unorganized waste management sector. A review by Binion and Gutberlet, 2012 highlighted that informal/unorganized recyclers encounter a range of problems including – (a) respiratory ailments - decrease in lung function, respiratory diseases such as tuberculosis, pneumonia, asthma, and bronchitis; (b) stomach infection – diarrhea, parasitic infection; (c) ergonomic and musculoskeletal damage – back pain and general body pain; (d) mechanical trauma – cuts, blunt trauma, fractures, falls, lacerations, and traffic accidents; (e) stress; (f) skin infections (Binion and Gutberlet, 2012). A cross-sectional survey conducted among women ragpickers in Mumbai, India reported high morbidity among ragpickers who collected rags along dumpsite than street side and door to door waste collectors (Uplap and Bhate, 2014). Another cross-sectional study done in municipal solid waste workers in Mumbai showed high prevalence (70% during the past 12 months) of musculoskeletal trouble among the workers (Reddy and Yasobant, 2015). Another cross-sectional study conducted among garbage collectors in Pune reported a greater impairment in the lung function of garbage collection workers as compared to normal individuals. The study also found that the quality of life was lower in garbage workers than that of normal individuals considering the physical, social, and environmental aspects (Kulkarni and Pingale, 2019). All these studies have pointed the occupation-related nature of the health problems but being cross-sectional in nature the association could not be established. However, these studies have limited themselves to a select number of immediate exposures (employment duration, hours of work per day, type of skill) rather than considering the precarious work in its entirety.

2.6.1 Employment precariousness and occupational health of workers in unorganized e-waste processing sector

2.6.1.1. Definitional issues with e-waste

E-waste is one of the fastest growing waste streams in the world. However, the definition of e-waste has been a topic of discussion since years. The absence of an agreed definition has contributed to the lack of a shared understanding of the size of the challenge. Many organizations across the globe have tried putting forward their definition of e-waste (Lundgren, 2012).

At its 12th meeting in 2015, the Conferences of the Parties to the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal adopted technical guidelines on transboundary movements on electrical and electronic waste and used electrical and electronic equipment, which contain the following definition: "electrical or electronic equipment that is waste, including all components, subassemblies and consumables that are part of the equipment at the time the equipment becomes waste" (Lundgren, 2012). The Solving the E-Waste Problem (StEP) initiative, hosted by the United Nations University (UNU), defines it as "all types of electrical and electronic equipment (EEE) and its parts that have been discarded by the owner as waste without the intention of re-use". Items qualify for inclusion if they have "circuitry or electrical components with power or battery supply" (Lundgren, 2012). The directive of the European Parliament and of the European Council defines e-waste as electrical and electronic equipment, "including all components, sub-assemblies and consumables which are part of the product at the time of discarding". The Directive covers the following six categories of electrical and electronic equipment: temperature exchange equipment; screens and monitors; lamps; large equipment (any external dimension more than 50 cm) such as household appliances, information technology and telecommunications equipment, and electrical and electronic tools; small equipment (no external dimension more than 50 cm) such as household appliances, luminaires, musical equipment and toys; and small information technology and telecommunications equipment (no external dimension more than 50 cm) (International Labour Organization, 2019).

India has come up with its own definition under the subsequent rules on e-waste. The e-waste (Management) rules, 2016 defines e-waste as, "categories of electrical and

electronic equipment including their components, consumables, parts and spares covered under the rules". The rules categorize electrical and electronic equipment under two broad categories, namely, (A) information technology and telecommunication equipment, and (B) consumer electrical and electronics. The following are the items listed under information technology and telecommunication equipment: (a) centralized data processing - mainframed, minicomputers); (b) personal computing – personal computers (central processing unit with input and output devices), laptop computers (central processing unit with input and output devices), notebook computers, notepad computers; (c) printers including cartridges; (d) copying equipment; (e) electrical and electronic typewriters; (f) user terminals and systems; (g) facsimile; (h) telex; (i) telephones, pay telephones, cordless telephones, cellular telephones, answering systems. The items covered under consumer electrical, and electronics included: (a) television sets (including sets based on (Liquid Crystal Display and Light Emitting Diode technology; (b) refrigerator; (c) washing machine; (d) air-conditioners excluding centralized air-conditioning plants; (d) fluorescent and other mercury containing lamps (Ministry of Environment, Forest and Climate Change, 2016).

2.6.1.2 Quantity of e-waste discarded in 2019

As per the estimates, globally, 53.6 million metric tons (Mt) of e-waste was discarded domestically in 2019 with India as the third largest generator. Out of the estimated 53.6 Mt, only 9.3 Mt (17.4%) was reported to be treated formally (Forti et al., 2020). The problem of e-waste in India started burgeoning following the first phase of economic liberalisation since 1990s (Wath et al., 2010). The economic liberalisation has led to increased market penetration of products in developing economies including India, development of a replacement market in developed countries and a high product obsolescence rate which has subsequently contributed to the growth of e-waste (Lundgren, 2012).

2.6.1.3 Composition of e-waste

The composition of e-waste is diverse and differs across product lines and categories. It contains more than 1000 different substances which could be categorised under hazardous and non-hazardous categories (Lundgren, 2012). Broadly, it consists of ferrous and non-ferrous metals, plastics, glass and other items. It often contains

several persistent, bio-accumulative and toxic substances including heavy metals such as lead, nickel, chromium and mercury, and persistent organic pollutants such as polychlorinated biphenyls and brominated flame retardants. The presence of precious and rare earth metals – such as gold, silver, copper, nickel, neodymium, dysprosium, praseodymium in the e-waste makes it's recycling lucrative in nature (Lundgren, 2012).

2.6.1.4 Processing of e-waste

Extraction of precious metals from e-waste and its processed materials is more economical and energy saving than from direct mining (Awasthi and Li, 2017). This makes e-waste processing lucrative. But the processing of e-waste imposes challenge as it contains many different materials that are mixed, bolted, screwed, snapped, glued or soldered together. Toxic materials are attached to non-toxic materials, which makes separation of materials for reclamation difficult. Hence, responsible processing requires labour and/or sophisticated and costly technologies that safely separates materials (Lundgren, 2012). Like other types of waste, e-waste is also processed largely by the unorganized sector (Awasthi and Li, 2017). The cost associated with its processing in the organized sector could be one of the reasons for its transfer to the unorganized sector. The other prominent reason is the large availability of cheap labour in the unorganized sector (Lundgren, 2012). There is a dearth of studies in Indian context on the employment and working conditions of workers processing e-waste in the unorganized sector. Till today only one study has documented the same. The study conducted in the e-waste processing units in Delhi reported that while most of these units were owned by Muslims, the workers were low caste Hindu migrants from the neighbouring states. The unregistered units had workers who were mostly illiterate or poorly educated and were unaware about the harmful effects of recycling work. They were found to be processing e-waste in small and congested shops/houses on daily wages for long hours without using any safety equipment. They reported poor lighting, lack of ventilation, excessive heat, poor housekeeping, inadequate space for work, exposure to dust and hazardous chemicals as some of the pressing problems they had to deal every day. They were involved in a range of activities such as door to door collection as well as collection of e-waste from dumpsites, segregation, dismantling as well as using acid to extract

metals. The study also reported the involvement of large number of women and children in this work with women predominantly engaged in sorting and segregating the waste (Pandey and Govind, 2014). These issues were also reflected in two studies conducted among e-waste workers in Ghana (Akormedi et al., 2013; Asampong et al., 2015).

The existing studies have largely utilized environmental epidemiology lens to measure the presence of heavy metals and chemicals inside workers' body using exposure using direct exposure measurement techniques such as biological sampling (blood sample, urine sample, the hair sample and so on) (Feldt et al., 2014; Srigboh et al., 2016; Wang et al., 2011; Wittsiepe et al., 2017). A systematic review has summarized the health consequences among the workers as biological disturbances (disturbance in thyroid hormone functioning, micronuclei in binucleated cells, DNA damage and so on) of harmful exposure (chromium, lead, cadmium, BFRs and so on) (Grant et al., 2013). These studies, though important, have limited themselves in studying the immediate exposures. However, from the earlier discussion we know that workers' health is shaped by employment precariousness which in turn is shaped by the historical, social, and political factors.

A recent paradigm shift could be observed in the way the health problems are being studied among the workers. These studies, though limited in number and scope, are predominantly carried out by the researchers from the discipline of public health. The studies have reported physical injuries, Musculoskeletal problems, respiratory problems, skin problems, among others, to be the commonest health problems among workers (Adusei, 2015; Akormedi et al., 2013; Ohajinwa et al., 2017; Pandey and Govind, 2014). Other than the one which was a mixed-methods study (Amankwaa, 2014), the remaining were either qualitative (Akormedi et al., 2013; Asampong et al., 2015; Pandey and Govind, 2014) or quantitative studies. A couple of quantitative studies reported the association of injuries with job designation, geographical location, and age (Adusei, 2015; Ohajinwa et al., 2017). The qualitative studies reported non-usage of personal protective equipment, long working hour, job designation, exposure to dust and hazardous materials as potential contributors to health problems among workers (Akormedi et al., 2013; Asampong et al., 2015; Pandey and Govind, 2014). While these studies have gone beyond looking into the

presence of chemicals/toxins in workers' body, they did not conceptualize the embeddedness of workers' health/health problems in the larger macro-level factors.

2.7 Healthcare seeking practices of workers in unorganized waste processing sector

The employers in the organized sector or employers sharing employment relationship with the workers must make provision for their healthcare needs. For instance, the provisions made under factories act take care of the preventive, promotive as well as curative aspects of healthcare. The workers are provided with health insurance and there are designated healthcare facilities which cater to their healthcare needs (Saha, 2018). Similarly, the building and other construction workers' act take care of all aspects of health care including covering the healthcare expenses of workers in case of any injury/illness (Krishnamurthy and Nair, 2003). However, it is a different matter that there exist myriads of problems in the implementation of these provisions (Saha, 2018). On the other hand, most workers in the unorganized waste processing sector must depend on the availability and accessibility of the local healthcare system, which consists of both public and private healthcare systems, for their occupational as well as general healthcare needs (Alfers, 2017). While there is dearth of studies on healthcare seeking practices of waste processing workers including e-waste workers, the existing studies on informal/unorganized workers have reported their dependence on the private healthcare system, which is providing them with curative services, due to non-responsiveness of public healthcare system towards their specific healthcare needs (Alfers, 2017). Public healthcare systems are supposed to be designed with an aim of protecting the poor and marginalized sections of the society from inequities induced by market mechanism (Gaitonde, 2018). However, they seem failing when it comes to protecting these workers. The commission on social determinants of health highlights that the health systems can play an important role in the reduction of inequity, but that in certain circumstances poorly functioning health systems may perpetuate the effects of larger structural injustice and social stratification. Healthcare system is contingent on the larger and global balance of power for their evolution and functioning. The plethora of studies have documented and linked the rise of neo-liberal economic thinking and the weakening of publicly funded healthcare systems all over the world including India

(Gaitonde, 2018). The existing studies have pointed out that the public healthcare system is being systematically starved of funds and the largely unregulated private sector is being encouraged to fill the gaps. This is leading to a systematic destruction of institutional mechanism that is meant to protect the poor. This is linked to the twin goals of fiscal management and privatization of the neo-liberal paradigm of development. Thus, macro-policies not only lead to restriction of expenditure in the social sector but do in such a way that the poor and marginalized who are most dependent on it are the most affected. The public sector is no longer able to effectively play the safety net role it was originally intended to. The fragmentation of healthcare delivery services into a weak public sector and a strong private sector contributes to the production of inequity in health. The macro forces have negatively impacted the health workers' ability to provide services, and the fragmentation may also have significant impact on their motivation and commitment to serve the underprivileged (Gaitonde, 2018). The studies have also shown that the policies and programs, which have evolved following the reforms, are invariably not sensitive to the needs of the most marginalized and are not designed keeping their special needs in mind (Gaitonde, 2018). Even the government-run health insurance schemes appear to fail in catering the healthcare needs of workers. It has been highlighted that the services offered under health insurance focus less on commonly needed preventive care and occupational health services, and more on costly but less needed services such as surgery (Reddy and Mary, 2013).

2.8 Agencies and policies addressing workers' health Internationally and within India

2.8.1 At International level

The international community – United Nations and ILO – has long been deliberating on the rights of all workers irrespective of the employment relationship, whether wage employed or self-employed, in the form of declarations, treaties and conventions. Though United Nations' have come up with many declarations/conventions with the Convention on the Elimination of all forms of Discrimination against Women being the prominent one, it is the ILO which predominantly deals with issues pertaining to workers (National Commission for Enterprises in the Unorganised Sector, 2007). ILO is a tripartite U.N. agency which

brings together governments, employers and workers of 187 member states to make sure that the voices of all these stakeholders be given equal consideration while setting labour standards, developing policies and devising programs promoting decent work for all women and men. Its primary aims are to promote rights at work, encourage decent employment opportunities, enhance social protection and strengthen dialogue on work-related issues (International Labour Organization, 2021a). The ILO adopted the Declaration on Fundamental Principles and Rights at work in its International Labour Conference in 1998. The worker's rights, referred to as the "core labour standards" of the ILO, included eight ILO conventions. These conventions focus on issues of the right to freedom and effective recognition of the right to collective bargaining; elimination of all forms of forced or compulsory labour; effective abolition of child labour and minimum age; elimination of discrimination in respect of employment and education; equal remuneration (National Commission for Enterprises in the Unorganised Sector, 2007). India is one of the founding members of ILO and has ratified six out of eight core conventions. The two conventions which are yet to be ratified include – Freedom of Association and Protection of the Right to Organise Convention, and Right to Organize and Collective Bargaining Convention (International Labour Organization, 2018b). Other than these fundamental conventions, ILO also has a number of conventions related to governance and technical aspects. Since 1999, the ILO has extended its reach to include self-employed and other workers outside traditional employer-employee relationship by promoting opportunities for women and men to obtain decent and productive work, in conditions of freedom, equity, security and human dignity (National Commission for Enterprises in the Unorganised Sector, 2007).

2.8.2 At National level

In India, labour is on the concurrent list and hence regulatory provisions of the conditions of work are in the domain of both the State and the Central governments. The Directive principles of Indian constitution provide for securing the health and strength of employees, men and women; that the tender age of children are not abused; that citizens are not forced by economic necessity to enter avocations unsuited to their age or strength; just and humane conditions of work and maternity leave are provided; and the government shall take steps, by suitable legislation or in

any other way, to secure the participation of employee in the management of undertakings, establishments or other organizations engaged in any industry (National Commission for Enterprises in the Unorganised Sector, 2007). The existing labour laws regulate wages, social security, working and employment conditions, among others in occupation where a legitimate employment relationship exists. One of the pertinent laws related to wages include Minimum Wages Act. It empowers the government to fix minimum rates of wages for employees engaged in scheduled employment. Further, it necessitates the employer to pay to every employee at a rate not less than minimum rates of wages as fixed by a notification without any deduction (other than prescribed deductions, if any) (National Commission for Enterprises in the Unorganised Sector, 2007). Among the existing laws providing for social security among the workers, **Employees' State Insurance Act (ESI**) is the pertinent one. The scheme under this act is called ESI scheme which is administered by the Employees' State Insurance Corporation (ESIC), a statutory corporate body set up under the ESI Act. The scheme is a self-financed comprehensive social security scheme which provides for sickness and employment injury benefits, among others, to employees. These benefits are applicable only to those establishments where ten or more employees are employed and which are registered with Employees' State Insurance Corporation (ESIC). **The Factories Act regulates** working conditions along with catering to health, safety and welfare of workers in factories employing more than ten people and with the aid of power, or employing twenty people without the aid of power. It covers all workers employed in the factory premises or precincts directly or through an agency including a contractor, involved in any manufacture. It requires that the workplace should be kept clean with proper drainage system, adequate lighting, ventilation, temperature etc. The safety of the workers have to be prioritized with all necessary precautions at place. It directs for provision of sitting facilities, first-aid appliances, rest rooms among other things. To make sure these provisions are at place, an inspecting staff would conduct frequent inspection. In case of any violation, the culprit (whether employer or employee) would be penalized (National Commission for Enterprises in the Unorganised Sector, 2007). Another law which deals with workers' welfare is **the workmen Compensation Act** which provides for payment of compensation by the employer to

the employee for injury caused by the accident. It covers all the registered establishment other than those covered under ESI act. Along with all the above mentioned laws, **the Trade Union Act** provides for formal association of workers which protects their rights and facilitates collective bargaining power. Some of these mentioned laws are also applicable to certain types of unorganized sectors where a clear employer-employee relationship could be defined. For example, The minimum wages act and The Workmen compensation are also applicable for construction workers, beedi and cigar workers, plantation workers among others. Beedi and cigar workers are also eligible for ESI benefits (National Commission for Enterprises in the Unorganised Sector, 2007). Along with these, there exist separate acts to regulate the employment and working conditions of these workers such as The Building and Other Construction Workers (BOCW) act for building workers (Krishnamurthy and Nair, 2003), The beedi and cigar workers act, Plantations Labour act (National Commission for Enterprises in the Unorganised Sector, 2007). The trade unions also work extensively for the rights of these group of workers and the BOCW act was one of the products of such work (Krishnamurthy and Nair, 2003). This act came into being in 1996 following a huge strike by workers with a strong support from trade unions. The act provides for the constitution of a welfare board. The workers upon registration as a beneficiary, as mandated by the act, are provided with identity cards. The board is funded both by the registered workers and by the employers (Ministry of Labour and Employment, 1996). However, there are enough literature on how these laws are failing to address the occupational safety and health of workers both in the organized sector and the above mentioned unorganized sectors (Saha, 2018).

All the above-mentioned acts are underlined by the concept of scheduled employment which means an employment specified in the schedule, or any process of work forming part of such employed, by the government (The Minimum Wages Act). Enlisting under scheduled employment gives the economic activity a legal status which then forms the basis for the implementation of workers' welfare measures (information provided by a trade union member during in-depth interview)

Brewing up of alternative discourse on the need to ensure health and safety of workers outside the traditional relationship

The discourse surrounding the health and safety of workers outside the traditional employment relationship was raised by various groups since late 1960s. The First National Commission of Labour (FNCL), which devoted its attention towards labour in unorganized sector, submitted its report in 1969 with a handful of following recommendations: first hand detailed surveys from time to time to understand the problems of different categories of unorganized labour; legislative protection by the state for unorganized/unprotected labour; simplification of legislative and administrative procedures applicable to all small establishments; expediting education and organization in the field of unorganized labour; reinforcement and strengthening of the inspection system as there is no alternative to the existing implementation machinery; steps for the protection of workers against middlemen, and development of self-help through cooperatives (National Commission for Enterprises in the Unorganised Sector, 2007). The National Commission on Self-employed Women and Women Workers (NCSEW) in 1988 came up with a set of recommendations for the welfare of women workers in unorganized sector. National Commission on Rural Labour (NCRL) in 1991 recommended a multi-dimensional strategy to lift rural labourers out of poverty. It proposed specific recommendations for various categories of workers including handlooms beedi making, construction, brick-kilns, toddy tapping, fisheries, leather and also the sweepers, bonded labourers and migrant labourers (National Commission for Enterprises in the Unorganised Sector, 2007). The Ministry of Labour and Employment (MoLE) proposed a comprehensive legislation for agricultural workers in 1997 including regulation of employment, conditions of service and for the provision of welfare measures. The Bill contained provisions for regulation of conditions of work, welfare, and social security but covered only wage workers. The Second National Commission of Labour, 2002, proposed recognition and protection for all types of unorganized sector workers irrespective of industry, occupation, work status, and personal characteristics. The provisions included social security, health and safety, working hours, holidays, prohibition of child labour, workers' right to access the common natural resources to develop and increase the productivity through work, traditional

rights related to work and space, protection from unfair labour practices, retrenchment without a reasonable cause, education, training and skill development. It recommended the integration of proposed legislation with the existing laws, policies and schemes. It suggested setting up a Central Board at the Centre, State Boards at the state level for the administration of this act, district level boards and Worker Facilitation Centres (WFCs) at lower levels (National Commission for Enterprises in the Unorganised Sector, 2007). Two Bills proposing comprehensive legislation for regulation of employment and conditions of service, social security and welfare of unorganized sector workers were also put forward by the National Centre for Labour and National Campaign Committee for unorganized sector workers in 2005. The National Advisory Council of the Government formulated a standalone bill on social security for unorganized sector workers. This bill along with the one proposed by the MoLE were forwarded to the NCEUS (National Commission for Enterprises in the Unorganised Sector, 2007). The NCEUS was formulated by the then newly elected national government in 2004 to address the issues faced by the unorganized sector workers (Shroff et al., 2015). All the suggested Bills were considered in the 40th Indian Labour Conference which was held in December 2005 (National Commission for Enterprises in the Unorganised Sector, 2007). The National Social Security Scheme received a legal back up and in December 2008 'The Unorganized Workers Social Security Act' was passed by the parliament (Shroff et al., 2015). The act is yet to be implemented (Upadhyaya, 2020). In February 2009, the MOLE approved the National Policy on Safety, Health and Environment at Workplace (NPSHEW). The fundamental purpose of the policy is not only to eliminate the incidence of work related injuries, diseases, fatalities, disaster and loss of national assets and ensuring achievement of a high level of occupational safety, health environment performance through proactive approaches but also to enhance the well-being of the employee and society, at large (Ministry of Labour and Employment, 2009). The Ministry of Health and Family Welfare also appeared to recognise the occupational healthcare needs of workers in unorganized sector which was reflected in the subsequent policies subsequent policies (National Health Policy – 1983, 2002, 2017) (Ministry of Health and Family Welfare, 2017, 2002, 1983). The National Urban Health Mission (NUHM), rolled out in 2013,

recognised the need to focus on vulnerable population such as homeless, rag-pickers, street children, rickshaw pullers, construction and brick and lime kiln workers, sex workers, and other temporary migrants (Ministry of Health and Family Welfare, 2013). A Technical Resource Group was formulated to guide the NUHM in addressing the health issues of vulnerable sections of the society. The TRG included officers of the Ministry, representatives of the state governments and urban local bodies working on urban health issues, and members of the civil society and academics who had been working with issues of urban health. The group highlighted occupational vulnerability as one of the three vulnerabilities and emphasized the need to take this account while delivering healthcare services in the urban slums (Ministry of Health and Family Welfare, 2014).

The Planning Commission (replaced by NITI Aayog in 2015) constituted a working group to prepare the 12th Five Year Plan report on occupational safety and health at workplace under the chairmanship of secretary, MoLE, in mining sector, factories & dock and unorganized sector. The report largely described the issues and suggested recommendations for the mining sector as well as factories and dock. The group identified the non-existence of occupational safety and health cover for workers in the unorganized sector (Ministry of Labour and Employment, 2011) .

From the above discussion, it could be understood that while at the international level a need was felt to ensure health and safety of all types of workers, including the self-employed ones in the unorganized sector, at the national level the policies appear to largely cater to the workers with traditional employment relationship or those

employment which are listed as scheduled employment. The necessity to ensure occupational safety and health needs of self-employed workers or workers who do not share traditional employment has been discussed since 1960s however despite repeated attempts they remain excluded from the subsequent policies.

2.9 Policies related to e-waste processing

Being the third leading domestic e-waste generator in the world (illegal imports further add to it) (Forti et al., 2020) and a signatory to Basel convention, it is a huge task for India to ensure scientific management of e-waste (Lundgren, 2012). The Basel convention on the control of transboundary movements of hazardous waste

and their disposal was adopted on 22nd March 1989 by the conference of plenipotentiaries in Basel, Switzerland, in response to a public outcry following the discovery, in the 1980s, in Africa and other parts of developing world of deposits of toxic wastes imported from abroad. Its overarching objective is to protect human health and environment against the adverse effects of hazardous waste (Lundgren, 2012). Basel convention recognises e-waste as a hazardous waste. It started to address e-waste issue since 2002 which include, among others, environmentally sound management; prevention of illegal traffic to developing countries; building capacity around the globe to better manage e-waste (Lundgren, 2012). To do so, India has framed separate rules for e-waste management. The first rules appeared in 2011 (Ministry of Environment and Forests, 2011) followed by two amendments in 2016 (Ministry of Environment, Forest and Climate Change, 2016) and 2018 and the latest rules is called as E-waste (Management) Amendment Rules, 2018 (Ministry of Environment, Forest and Climate Change, 2018). Four hundred formal e-waste dismantling/recycling units are currently functioning in the country (Central Pollution Control Board, 2021a), yet more than 90% of the domestically generated waste is being processed in the unorganized sector providing livelihood for over a million of urban poor (Awasthi and Li, 2017). Hyderabad, the capital city of Telangana, has turned out as the hub of Electronic System Design and Manufacturing. It ranked sixth among the leading top ten e-waste generating cities in India in 2018. It was included in the clean e-India programme for responsible collection and recycling of e-waste. A recent survey (2016-2017) revealed that more than 90% of e-waste generated in Telangana found its way to the unorganized sectors (Ministry of Environment, Forest and Climate Change et al., 2017). The Government of Telangana launched its separate policy for e-waste management in 2017 with one of its visions as to assist the highly unsafe unorganized sector transition into the organized sector through various initiatives. The policy was in line with the e-waste (Management) rules, 2016. The policy document expresses concern about the recycling of e-waste in unorganized sector as it exposes the individuals to life threatening risks (Government of Telangana, 2017).

2.10 Approach to policy analysis

The dominant model of policy analysis assumes police making to be a rational process with comprehensive rationality as its theoretical underpinning. It represents an ideal type of decision making in which policymakers translate their values and aims into policy following a comprehensive study of all choices and their effects. Thus, policy problems are assumed to be technical questions, resolvable by the systematic application of technical expertise. Hence, there lies an underlying assumption that the policy, thus, formed would solve the problem (Goodin et al., 2008). When it fails to do so, the attention shifts to finding gaps in the implementation process. However, with the subsequent development in the field of policy analysis, social scientists have started to utilize post-positivist or social constructionist approaches to understand the policy making. The post-positivist approaches deal with the question of how a particular problem is conceptualized/conceived in the first place, and the contextual factors that enable it to arise as legitimate. Thus, there is a shift from seeing policy as a problem-solving approach, to a problem questioning approach in post-positivist studies (Bacchi, 2014). This could be further explained by using the concept of ordering device, the conceptual tools utilized by analysts to capture how policy actors deal with ambiguity and allocate particular significance to specific social or physical events. These ordering devices explain how policy makers structure reality to gain a handle on practical questions. One could locate a variety of approaches under the umbrella of 'post-positivist', which lie on a continuum between an individual ontology in which ordering is understood in terms of individual capacities (e.g., ordering in terms of individual 'beliefs') and a relational pole that describes ordering in terms of the patterns of social interaction that characterize a particular situation (e.g., some work on frames and on discourse) (Hajer and Laws, 2006). I have utilized 'What's the Problem Represented to be?' approach (WPR) proposed by Carol Bacchi, which represents the other extreme of the continuum that falls under the domain of discourse. It challenges the conventional view that public policies are reactions to the problems lying outside the policy process, waiting to be discovered and solved, rather, it offers a way to question critically how policies produce 'problems' as particular sort of problems, which Bacchi labels as 'problematizations', with

important political implications (Bacchi, 2014). The rationale for using this approach could be justified on the ground that the interventions proposed in the policy documents appear to distance themselves from the ground reality (in the context of occupational safety and health) of the group of workers in certain types of unorganized sectors, e-waste processing sector being one among them. I have used the word 'distance' based on the disconnect between what I have observed in the ground (in almost seven months of my data collection) and what is being prescribed in the key policy documents. For instance, workers were predominantly self-employed with the help of family members/friends and, hence, the employment relationship was either fuzzy or absent whereas the policy document (NPSHEW) assumes the presence of a clear employer-employee relationship (Ministry of Labour and Employment, 2009). The units were not registered however the policy document assumes that all worksites are registered and recognized. This reflects that the problem does not lie with the implementation, but the way occupational safety and health is being constructed and thus the assumptions that inform policy making in India.

To unearth the problematization Bacchi proposes the following six questions:

1. What's the 'problem' (e.g., of 'problem gamblers', 'drug use/abuse', domestic violence, health inequalities etc.) represented to be in a specific policy? (Bacchi, 2014)
2. What presuppositions or assumptions underlie this representation of the 'problem'? (Bacchi, 2014)
3. How has this representation of the 'problem' come about? (Bacchi, 2014)
4. What is left unproblematic in this problem representation? Where are the silences? Can the 'problem' be thought about differently? (Bacchi, 2014)
5. What effects are produced by this representation of the 'problem'? (Bacchi, 2014)
6. How/where has this representation of the 'problem' been produced, disseminated and defended? How could it be questioned, disrupted and replaced? (Bacchi, 2014)

The goal of first question is to identify implied problem representations in specific policies or policy proposals which in many times could be more than one and which

may conflict and contradict each other. This is followed by the need to understand assumptions/pre-suppositions underlining the identified problem representation/s. What is assumed? What is taken for granted? What is not questioned? These are answered through second question which attempts to identify and analyze the conceptual logics the underpin specific problem representation (Bacchi, 2014). The term 'conceptual logic' refers to the meaning that must be in place for a particular problem representation to cohere or to make sense. Hence, the goal of second question is to unravel the (assumed) thought that lies behind specific problem representations. The purpose of third question is to highlight how a particular problem representation emerges and subsequently become dominant by examining its origin, history and mechanism. While examining the dominant problematization/s it is equally important to uncover what fails to be problematized? The fourth question deals with the issues and perspectives that are silenced in identified problem representation/s (Bacchi, 2014). A WPR approach to policy analysis starts from the presumption that some problem representations create difficulties for members of some social groups more so than for members of other groups and hence the objective of fifth question is to identify the effects of specific problem representations so that they can be critically assessed. The last question pays attention both to the means through which some problem representations become dominant, and to the possibility of challenging problem representations that are judged to be harmful (Bacchi, 2014). I have attempted to analyze the policies addressing occupational safety and health of workers in unorganized sector (where the employer-employee relationship is obscured) by utilizing the first four questions.

2.11 Current study

The current study attempts to explore the immediate occupational health of working currently engaged in e-waste processing in the unorganized e sector in the Bholakpur ward of Hyderabad district by exploring their occupational health problems, healthcare seeking practices, employment and working conditions and the existing occupational safety and health policies. There is a lack of focus on occupational health of these workers despite presence of a large unorganized e-waste processing sector in Hyderabad. The existing studies have predominantly utilized biomedical lens to study the health problems among workers in general. However, recent studies

have tried to broaden the scope by focusing on employment and working conditions as well as the healthcare seeking practices of workers in unorganized waste processing sector in general. This is because it has been increasingly realized that workers do not make choices in circumstances that are of their choosing rather their choices are embedded in the larger social, economic, and political context (Nichols, 1999). This is explicitly highlighted by Muntaner et al. and Benach et al. in their work on the health and quality of life among workers in informal employment or precarious employment (Benach et al., 2010; Muntaner et al., 2010). For this study, I have utilized their frameworks to enquire the health problems and healthcare seeking practices of workers currently engaged in e-waste processing in the unorganized sector. Also, I have utilized the concept of occupational vulnerability emphasized by the Technical Resource Group on National Urban Health Mission in India. The group has emphasized that the occupational vulnerability among urban poor has bearing on their health and healthcare seeking practices (Ministry of Labour and Employment, 2011).

2.12 Theoretical underpinnings for the current study

The theoretical underpinnings of the proposed study rest on two theoretical frameworks explaining emplyment relations and workers' health , at macro level and at micro level, proposed by Muntaner et al. and Benach et al. in 2010 respectively The framework proposed by Muntaner et al., **Macro-social theoretical framework**, attempts to explain the complex link between macro-social power relations, employment conditions, and the health of workers (Muntaner et al., 2010) whereas the framework proposed by Benach et al., **Micro-structural framework**, traces the effects of employment and working conditions on workers' health (Benach et al., 2010) .

2.12.1 Macro-social theortical framework

The framework attempts to explain the complex link between macro-social power relations, employment conditions, and the health of workers. It postulates that employment conditions are shaped by interplay of power in the labor market, government and civil society at the macro-level. These power relations then create intermediary social mechanisms in the form of labour market policies and welfare policies. It is the dynamics between these policies which then determine employment

conditions and subsequently workers' health (Muntaner et al., 2010). Further, the power relations shape the life experiences of different social groups through their influence over access to healthcare, social services, and working conditions. Hence, social inequalities are the product of 'political economy of health' which is explained by the authors in the following way - The power dynamics between the government and civil society act as a key causal force which shapes labor market and welfare state policies. The influence of this power dynamics in the labour market ranges from labor regulations to collective bargaining (Muntaner et al., 2010). Whereas when it comes to social policies in the context of welfare state, this power dynamics determines the level of distribution. It is of paramount importance to understand how the power dynamics influence the two institutions – labour market and welfare state – as workers health and welfare depend on the policies which emerge from these institutions. Being deeply intertwined with each other hence functioning of one is affected by the functioning of other. For instance, the more protection citizens receive from the welfare state, the higher is the level of labor market "decommodification." Decommodification is gauged by the extent to which unemployed workers can sustain their livelihood. The state's welfare policies protect the work force from the labor market's notorious insecurities" (Muntaner et al., 2010).

Relevance of Macro-social theoretical framework in studying occupational health of workers processing e-waste in unorganized sector in India

This Macro-social theoretical framework equally appears to be relevant for studying the occupational health of workers currently processing e-waste in the unorganized sector in India where the power relations at the macro-level shape the labour and welfare policies. The unorganized sector continues to be the predominant source of livelihood for the majority in India even after the adoption of economic reforms (International Labour Organization, 2018a). This could be attributed the way labour policies are framed since historical times which in turn have excluded a large section of workers who are predominantly self-employed in the unorganized sector. Along with the labour policies, the welfare policies (predominantly health policies) also seem to have miss this section of workers leaving them under the mercy of private sector (Alfers, 2017). The continuous degradation of public healthcare system and

the booming of private healthcare system has forced these workers to seek care in the private sector by paying for the service which they could have otherwise received free of cost (Gaitonde, 2018).

2.12.2 Micro-structural theoretical framework

The framework explicates the potential links between employment conditions and workers' health through several behavioral, psychosocial, and physio-pathological pathways. The framework explains how employment conditions shape workers health through working conditions. Working conditions consist of potential occupational hazards which could be divided into five main categories: physical, chemical, biological, ergonomic, and psychosocial. They include factors such as repetitive movements, work intensification, hard physical labor, shift work, and lack of control. While each factor could contribute to different health outcomes through specific mechanisms, it is the existing general social mechanisms or axes such as social class, gender, and ethnicity/race which equally affect workers' health (Benach et al., 2010).

Employment conditions affect workers' health through pathways of material deprivation and economic inequalities (nutrition, poverty, housing, income, etc.). Additionally, these potential consequences of employment conditions could contribute to chronic diseases and mental health via psychosocial factors, lifestyle behaviors, and physio-pathological changes. Further, the central importance of one's position in a hierarchy also plays a key role. All these exposures i.e., physical, chemical, and biological exposures are referred as neo-material whereas socio-psychosocial exposures are labelled as psycho-social. There is sufficient evidence to show that all these types of exposure affect health. These exposures do not exist in isolation rather are intertwined and, hence, should be integrated into a comprehensive framework while studying workers' health (Benach et al., 2010).

Relevance of Micro-structural theoretical framework in studying occupational health of workers processing e-waste in unorganized sector in India

This Micro-structural framework marks relevance while studying occupational health of workers processing e-waste in unorganized sector in India because of the very nature of the waste and the deplorable working conditions they are exposed with.

Historically, it is always the poor, low caste Hindus and Muslims who have been engaged with waste processing including e-waste processing (Rathore, 2020).

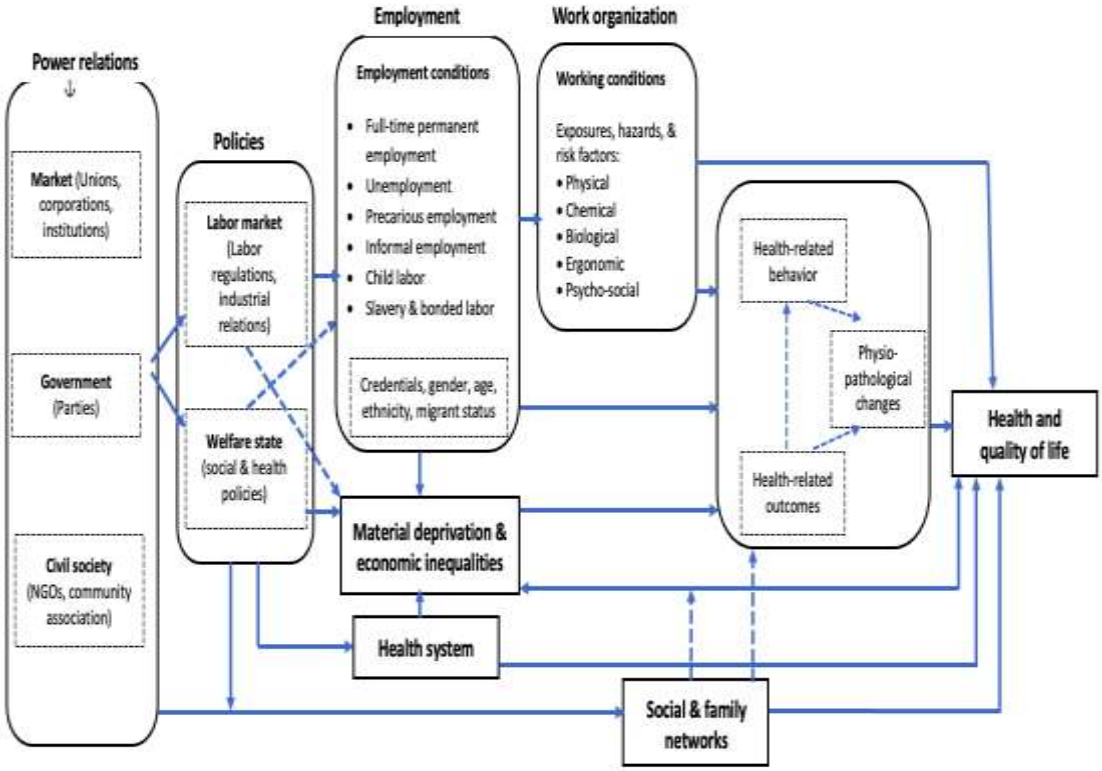

Fig. 2.1: Theoretical framework of employment relations and health inequalities (including both macro-level and micro-level frameworks)

CHAPTER 3: METHODOLOGY

3.1 Am I still the same? – my evolving positionality

My first interaction with the e-waste processing community happened at the time of my master's thesis. I intended to study whether workers working with e-waste were aware about the health problems which could result from its processing. I think through this very statement I boxed them as "uninformed"/ "unaware". I portrayed myself as an 'expert' who strongly believed that workers were unaware about the health problems. I did not take into consideration their employment or working conditions, rather my primary question was about the use of personal protective equipment. I never asked myself who were these 'workers'? why were they working with e-waste? why this phenomenon was specific to Bholakpur? My perspective was colored with a model of occupational health which restricts itself looking into the immediate exposures such as presence or absence of different hazards (physical, chemical, biological), use or non-use of personal protective equipment, duration of work. However, after getting enrolled into PhD program I was exposed to a variety of literature including inequity, power, precarity which then broadened my understanding of occupational health. I thought this time I was better as a researcher than what I was during my master's work, I completely missed contemplating on my 'personal characteristics'. This lack of introspection hampered my smooth entry into the community. I had to revert to my mentors to find the solution who in response recommended me to utilize healthcare system as a mode of entry to the community. I figured out a nearby Tuberculosis Unit (TU) where people from the community were seeking care. I got the permission from the Medical Officer (MO) to sit there and observe people. The MO introduced me to a community health worker (CHW) who was serving in the area for almost four to five years and asked me to accompany her during her visits in the area. I followed the instructions of MO and it worked. However, I had to struggle almost for a month before I could interview any worker. Interestingly, it was not me as a researcher who workers were responding to but to me as a person representing the healthcare system. As they had observed me sitting in the TU they believed I was someone from the healthcare system. In a few instances, I was even asked whether I was a doctor. Though I was still an outsider, I now had 'power'. The source of this power was the healthcare system where I supposedly belonged to. I did not lie to the community, I explicitly informed them

about my purpose of being there. However, initially I could not tell the truth that I was not from healthcare system. I did not want to hide it intentionally, but I was apprehensive that the workers would not respond as I was an outsider who was out there to collect their data for my personal gain. I was in a constant conflict with myself whether I should reveal who I was. Gradually, I established good contacts with a few senior members of the community, and I communicated them clearly that I was not from healthcare system. I anticipated some form of repercussion but to my surprise they accepted me without any problem. I, then, started my exploration about the workers i.e., who were they? Why were they working there? why e-waste processing was specific to Bholakpur? We also used to have a lot of political discussion, and I think my political ideology also would have contributed to some extent in reducing the distance between 'them' and 'me'. However, I was also conscious enough to make sure that my political ideology should not color my findings. Though I tried my best to become a part of the community, the subtle power between 'me' and 'them' was always in place. Having tea while talking to them became a routine activity for me. It was extremely difficult for me to have it at a time when the summer was at its peak (temperature used to be in between somewhere 40 degrees to 46 degrees on most of the days) however I could not deny. I tried refusing once or twice (it used to taste like sugar syrup) and also tried explaining the reason but they thought because I was 'educated' and, hence, I would prefer coffee over tea and from that moment they started ordering coffee. Also, though most of them used to sit on the floor and work, they would arrange chair for me. I never wanted to have the binary of 'them' and 'me' but somehow I could not avoid it. I refused having coffee and shifted back to tea. The workers started inviting me for their family functions, I was also called for lunch on a couple of occasions. With this I started feeling that I was able to reduce some gap between 'me' and 'them'. I feel that this would have also contributed to legitimizing my presence there. Now I was like a free bird, I was moving freely and discussing with workers their issues. Another thing which tested me as a researcher was the frequent sexist comments I had to hear on the field from a few. Initially I used to feel bad and used to think that what type of men these are? Don't they feel shame in passing such comments? I think I was trying to label them as 'bad men'. However, while

travelling back to my hostel or while writing notes I constantly used to think about those comments. what is making them utter such words? can I completely blame them for those words? are they passing such comments because they are working with waste which is considered a 'dirty work' and so they are also 'dirty'? why are they working with waste? is it because they are less educated? why are they less educated? what is the implication of being less educated? The moment I started asking all these questions to myself, I realized how wrong I was in even thinking of labelling them as 'bad men'. However, I was still not sure whether those sexist remarks were acceptable to me. I think I was forced to come in terms with those for the sake of my research.

I was supposed to go the field after a couple of months to conduct the second phase of my study – a cross-sectional survey and in-depth interviews among relevant stakeholders on the policies addressing the occupational health and safety of workers in unorganized sector. This time I did not have to rely on community health worker, I could move freely by my own. However, the 'gaze' continued. I was out there to do a survey for which I needed to interview 250 workers. I did expect resistance from the community especially with regard to signing of informed consent form. I thought I would be able to convince them as I was now known to the area however it turned out as an over-confidence. Those who were ready to participate, refused to participate when they came to know that they had to sign a paper indicating their willingness. I again felt that the gap between 'me' and 'them' has widened. I took the help of senior members in the community, who I had developed good rapport with, and they suggested that a person from the local community would accompany me and help me in convincing workers to be part of the study. This strategy worked well. The work was progressing smoothly until the time the national government passed the Citizenship Amendment Act (CAA) on 11th December 2019 (I have detailed the challenges I had faced during the survey due to the passage of CAA in a paper which got published in Indian Journal of Medical Ethics in detailed about). The trust I had gained over the period started weaning off. The gap between 'me' and 'them' started increasing. I was questioned on my caste, religion, political ideology which were never a matter of conversation before the passage of CAA. Though I always recognized my privilege of being an upper caste Hindu, it was during this

moment of data collection I, actually, understood what it meant to be an upper caste Hindu.

Now, when I am almost finishing my PhD journey, I have realised that had I conceptualised this study as a participatory research using the social-epidemiological lens, I would have been able to tell the story in a much better way.

3.2 Conceptual framework

The conceptual framework for the proposed study draws on the theoretical frameworks proposed by Muntaner et al and Benach et al which go beyond the biomedical way of understanding occupational health to situating it in the larger socio-political context (Benach et al., 2010; Muntaner et al., 2010). These theoretical frameworks consist of a range of determinants which shape workers health (as described under the sub-section 'theoretical underpinnings for the current study') however I chose to explore a limited number of determinants as depicted in the figure below. To understand their occupational health, I chose to focus on their occupational health problems which could be shaped by their working conditions which in turn could be embedded in their employment conditions. Also, their health problems could result directly from the employment conditions (for example- no provision of safety equipment or long working hours). The employment conditions could depend on the labor policies (occupational safety and health regulations) and welfare policies (social security and health).

The healthcare seeking practices of workers could depend on their perception of the severity of the health problems, their employment conditions as well as also on their economic conditions. The economic conditions of workers result from both employment conditions and the types of welfare policies adopted by the state. Further, their healthcare seeking practices could depend on the characteristics of the local healthcare system including availability and accessibility. The characteristics of local healthcare system could be dependent on the welfare policies (social security & health) adopted by the state. All these domains – labour and welfare policies, employment conditions, working conditions, occupational health problems, healthcare seeking practices, healthcare system, socio-demographic characteristics, historical background of study setting – do not operate in isolation but are embedded

in the lager power-relations. Further, these domains could be visualized at three levels – micro level consisting of socio-demographic characteristics, employment conditions, working conditions, occupational health problems, healthcare seeking practices; macro and meso levels consisting of historical background of study setting, healthcare system and labour and welfare policies (occupational safety and health).

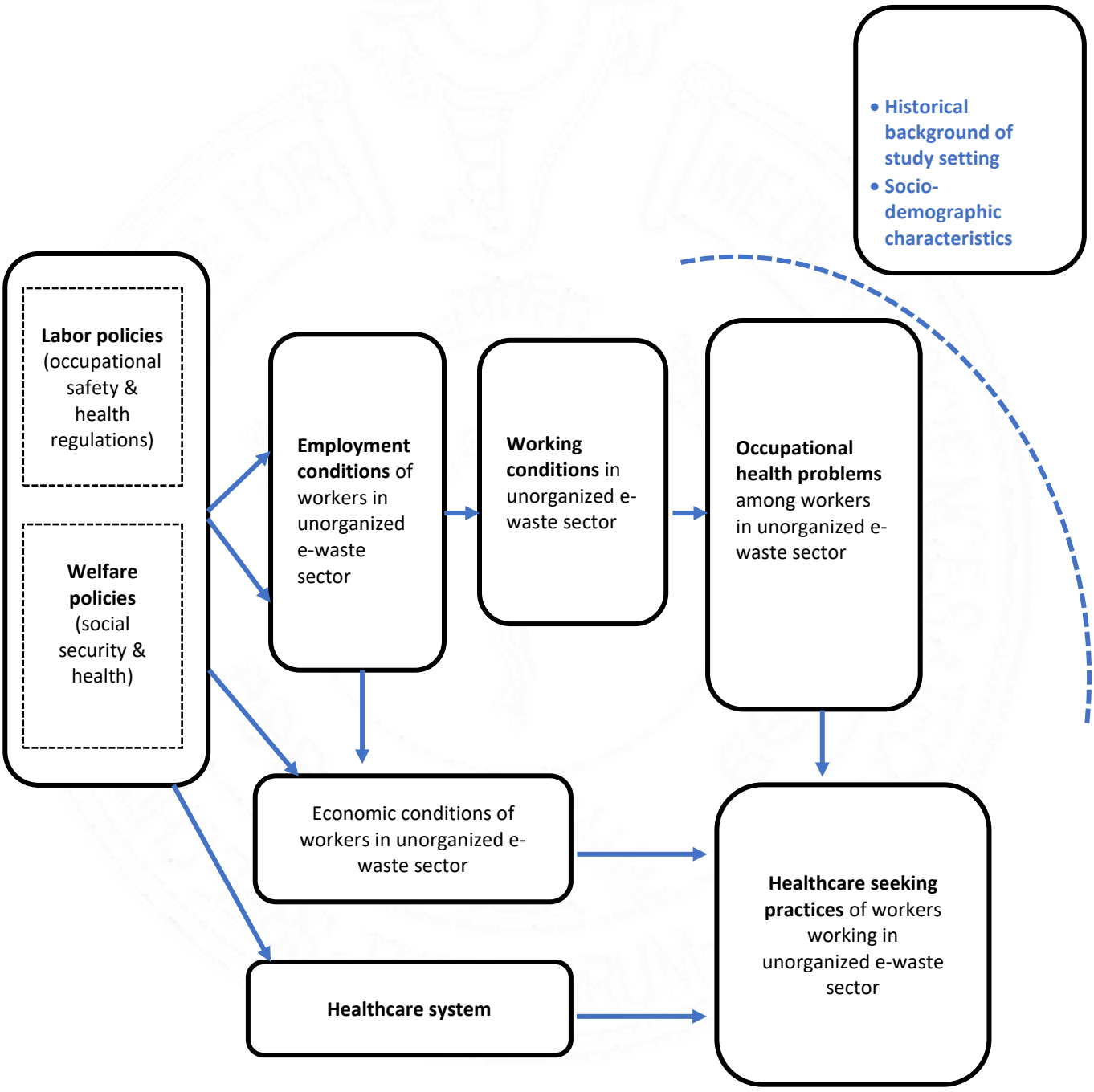

Fig. 3.1: Conceptual framework of the study

3.3 Study setting

The current study was carried out in e-waste processing units located in the slums of Bholakpur ward of Hyderabad city. E-waste was observed to be processed in small units which were located either as stand-alone units or on the ground floor of two-three storied buildings. These were generally single-room units with much of the space occupied to store e-waste.

About the health care system in the area, there were two charitable clinics (both had modern medicine practitioners); six private clinics (one ran by a modern medicine practitioner and the remaining five were by the AYUSH); one bone-setting clinic; two Urban Primary Health Centers (UPHCs) set up by the state government; one government's tertiary care center within a radius of two-three kms of e-waste processing units. The details of the study setting are further expanded upon in subsection 4.1.1 in the results chapter.

3.4 Study approach and study design:

This study has utilised a case-study approach which consists of two components - (a) sequential exploratory mixed-methods design, (b) standalone qualitative design.

Yin (1994) defined a case study as "an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident….[and] relies on multiple sources of evidence". He further added, one should use a case-study because he or she deliberately wants to study contextual conditions. He argued that case-study should not be confused with qualitative research rather it is a comprehensive research study that deals with situations "in which there will be more variables of interest than data points", "relies on multiple sources of evidence, with data needing to be converged in a triangulating fashion," and that "benefits from the prior development of theoretical propositions to guide data collection and analysis". Depending on the type of research question the case study could be divided into three types – exploratory, descriptive, and explanatory (Yin, 2003). I have attempted to explore the case of occupational health of current workers processing e-waste in unorganized e-waste sector by studying their health problems and healthcare seeking practices in the context of existing policies which shape their occupational safety and

health, employment and working conditions, and the availability and accessibility of healthcare system in the vicinity.

The sequential exploratory mixed-methods design involves collection and analysis of qualitative data first. Categories/themes emerging from the analysis are used to drive the development of a quantitative instrument to further explore the research problem (Berman, 2017). For the current study, I have used equal status mixed-methods design in which both the qualitative and quantitative component are of equal value and weight (Schoonenboom and Johnson, 2017). The data collection was carried out in two main phases (Phase I and Phase II). The first phase was conducted between March 2019 to 15th June 2019 where I conducted qualitative exploration and mapped the relevant policy documents. This phase was followed by the intermediate phase where I analysed data collected from the first phase, developed a structured interview schedule, and mapped relevant policy documents. The second phase commenced in November 2019 and lasted till 15th March 2020 where I carried out a cross-sectional survey, mapped out the healthcare facilities, and conducted qualitative exploration for policy analysis. The final phase started in April 2020 and continued till April 2021 in which I finished the remaining policy analysis and started preparing first drafts of my thesis chapters.

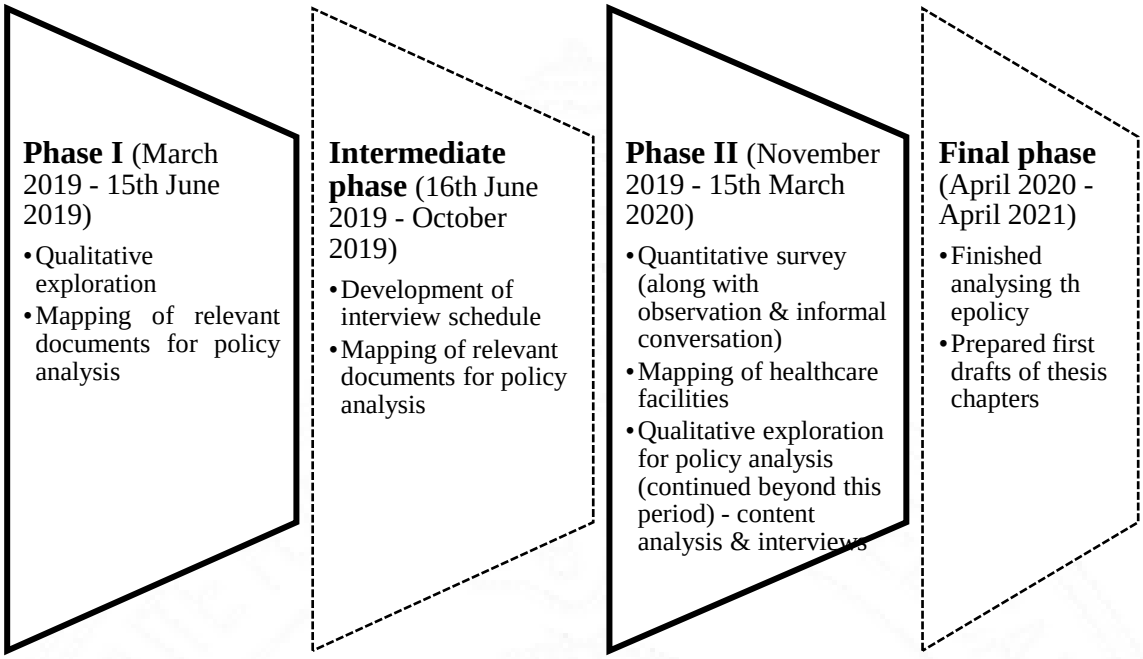

Fig. 3.2: Phases of the study

3.5 Ethical consideration

The study was approved by the Institutional Ethic Committee (IEC) of Sree Chitra Tirunal Institute for Medical Science and Technology. I had to obtain approval from IEC in both phases of data collection. Informed consent were obtained from all the respondents after providing the necessary information regarding the study, objectives, potential benefits and risk of participating in the study. They were informed that the decision to participate in the study or not is entirely their prerogative. They were also informed that they can withdraw from the study at any point. They have the freedom to ask any queries related to the study. However, I had to revert to IEC once again amid my second phase of data collection due to vulnerability felt by community as a result of the introduction of Citizenship Amendment Act (CAA) with its link to a proposed National Register of Citizens (NRC) which made obtaining written informed consent impossible (I have written a short paper on this which is published in Indian Journal of Medical Ethics) (Mishra and Gaitonde, 2020). I was then allowed to collect data following verbal consent. All

data, thus obtained, were anonymized and stored in a secured folder in Principal Investigators' computer.

3.6 Phase I

This phase was carried out between March 2019 and 15th June 2019. It constituted of two components – a qualitative exploration and mapping of relevant policy documents.

3.6.1 Qualitative exploration

As I found case-study to be the relevant approach for my study, it became indispensable for me to explore the context along with other things. The existing dearth of information about these workers made me to choose qualitative design to explore the relatively unexplored. I wanted to explore the larger context in which the occupational health of these workers is embedded and I realized that qualitative methods would give me a better view about the context. Further, in order to develop the structured interview schedule for the next phase I needed variables specific to occupational health of this community. There do exists questionnaires on occupational health but these are largely applicable to the workers working in an organized set-up or in a factory. However, my study respondents are working in unorganized sector, where in many cases the employment relationship is either absent or unclear, and hence I realized the available tools would not be helpful for my study. So, I decided to explore the variables using in-depth interviews, observations, and informal conversations.

3.6.1.1 Operational definitions

I have operationalized the definitions of the following for the first phase of my study – employment and working conditions (types of employment, physical condition of the workplace, ways of processing e-waste, job categories, training, first-aid kit, personal protective equipment, work-related social protection, workers' association); workers in unorganized e-waste processing sector; occupational health problems/conditions; healthcare seeking practices. The detail definitions are attached in the Annexures C - AII.

3.6.1.2 Respondents

The study respondents included workers working in unorganized e-waste processing units, healthcare providers, social worker, the general secretary of the plastic welfare committee, workers working with other types of waste.

3.6.1.3 Selection of study respondents

The workers were selected using purposive and snowball sampling. They were sampled based on the types of e-waste processed, age, months/years of work, and migration status, to obtain maximum variation. Specifically, the workers who were engaged with e-waste processing for at-least six months and were 18 years or above were included in the study. A total of seventeen workers, drawn from seven units, were thus interviewed in-depth along with the informal conversation with a few other workers. I continued interviews till such time that I started getting repeated information with regards to the employment and working conditions, occupational health issues, and healthcare seeking practices. The healthcare providers were chosen based on the reports of the workers. Attempts were made to meet all the doctors/clinics the workers mentioned that they used. Those met included: two modern medicine practitioners, five AYUSH practitioners as well as a traditional healer (bonesetter). I could only have informal conversation with other healthcare providers. I could not interview any of the providers from UPHCs due to inability to secure permission from District Medical and Health Officer. Also, two in-depth interviews with people (a social worker and an official of a welfare committee), who were working closely with the group of workers in the e-waste sector, were done. I also had an informal conversation with the ex-corporator of the ward to explore the context of e-waste processing in the unorganized sector in the selected slums. All the respondents were interviewed in a location of their choice which ensured maximum comfort.

3.6.1.4 Data collection

The study utilized semi-structured interview schedules to interview all the respondents. The data collection was carried out by contacting every respondent face to face, the interviews were done in Hindi. Since all the respondents other than the social worker, refused recording, a detailed note on each interview was made

immediately after the completion of the interview. Along with in-depth interviews, observation of waste processing activities and informal conversation were also carried out. A detailed research diary was maintained. The details are attached in Annexures C – AIV, AX, AVIII, AX

3.6.1.5 Data Analysis

Data collection and analysis were carried out simultaneously. Weft QDA version 1.0.1, free software to analyze qualitative data, was used for data analysis. Along with me two other researchers read all the transcripts. Open codes were generated by me and then were discussed with the other two authors. All the open codes were synthesized under different categories. The Coding Manual for Qualitative Researchers was referred to carry out the process of coding and categories development (Saldana, 2009). The analysis has been guided by the conceptual framework mentioned above. The analysis process was accomplished by all three researchers having different educational backgrounds and training through regular discussions, self-reflexivity, and triangulation of methods, to make sure that no one's view becomes predominant.

3.6.2 Mapping of documents

I carried out a desk review to map out the relevant policy documents dealing with occupational safety and health of workers in the unorganized sector. I scanned the websites of following organizations to find the relevant documents – National Health Portal of India, Ministry of Labour and Employment (MoLE), Central Pollution Control Board (CPCB), Telangana State Pollution Control Board (TSPCB), International Labour Organization (ILO). I further interacted with the experts working in the area of policy/occupational health to explore additional documents.

3.7 Intermediate phase

This phase constituted of two components – development and piloting of an interview schedule, and mapping of relevant policy documents.

3.7.1 Development and piloting of a structured interview schedule – A structured interview schedule consisting of both closed ended and open-ended questions was developed based on the findings of the qualitative study to collect information on the

socio-demographic characteristics, employment and working conditions, occupational health problems and healthcare seeking practices regarding among the workers. The schedule was piloted on seven randomly selected e-waste workers one week prior to the final data collection period. A few modifications were done as indicated by the pilot study. The data of the pilot study was not included in final analysis.

3.7.2 Mapping of documents – I continued my desk review by searching for documents on the relevant websites (as mentioned in section 3.6.2) as well as kept interacting with experts to explore the relevant documents/grey literature

3.8 Phase II

This phase was carried out between November 2019 and 15th March 2020. It constituted of three components – a quantitative survey (along with observation and informal conversation), mapping of healthcare facilities in and around the slums, and qualitative exploration for policy analysis

3.8.1 Quantitative survey

The objectives of the survey were to find the prevalence of occupational health problems and healthcare seeking practices regarding the same, and to describe the employment and working conditions among the workers.

3.8.1.1 Operational definitions – A list of key definitions were modified after the first phase and were redefined. The details are attached in the Annexures C - AXI.

3.8.1.2 Sample Size

The sample size was estimated, using OpenEpi version 3.01 software, based on a previous study conducted in Nigeria which assessed the prevalence of injury among workers in unorganized e-waste workers as 68% (six months preceding that study) (Ohajinwa et al., 2017). Taking into account the finite population correction factor and an absolute precision of 5%, the estimated sample size was 232. Further, expecting a non-response rate of 10% the sample size turned out to be 255 which was then rounded to 250 to obtain the final estimated sample size

3.8.1.3 Sample selection procedure

To obtain the estimated sample size it was decided to include all the units in the study as approximately a total of 750 workers could be found in the study setting.

The number of workers in each unit varied with a minimum of one to a maximum of seventeen and therefore selecting particular units would have made it difficult to reach the estimated sample size. I thus visited every unit – if the unit had only one or two workers I included them both, if more than two I randomly selected two of them by simple random methods (using a lottery system). In all I approached 172 units and 239 workers were eligible and gave consent to join the study. In addition, I interviewed 9 of 25 who were working independently of any units in the area. Hence, in total I could include 248 workers in the study.

3.8.1.4 Inclusion criteria

Workers of all genders, who were aged 18 years and above, involved in e-waste processing practices and who were willing to participate were included in the study. There were other units which were processing both plastic and e-waste but the current study included only those who were exclusively dealing with e-waste.

3.8.1.5 Non-response and substitution

Out of 186 units employers of 14 units refused to participate and the main reason cited for non-participation was the lack of time. One among them mentioned that they did not have any health issue and hence were not willing to participate. I had to return to many of the remaining units to obtain the required sample size.

3.8.1.6 Data collection

A structured interview schedule, consisting of both closed-ended and open-ended questions, was used to collect information about socio-demographic characteristics, employment and working conditions, occupational health problems, and healthcare-seeking practices among the workers. The detailed interview schedule is attached in Annexures C - AXIV. Along with survey, observation and informal conversation were also carried out and a detailed note was prepared for the same. I observed the units in terms of number of workers working in each unit, space available to carry out the work, ventilation, lighting, types of e-waste workers were processing, the way they were processing and so on. The detailed list is attached in the Annexures C - AV. The first phase of repeated visits and familiarization enabled a familiarity with the respondents, and they agreed to respond despite the busy schedules.

3.8.1.7 Data Analysis

The data were entered into a Microsoft Excel spreadsheet and exported to R software version 3.6.1 where further analysis was carried out. Two among two hundred fifty workers had to drop out after a few initial questions because of their time constraint and hence, the final analysis was carried out from a total of 248 workers. The variables for which univariate and bivariate analysis were carried out is described below:

Univariate analysis: The five sets of variables for the survey were – socio-demographic characteristics, employment conditions, working conditions, occupational health problems and healthcare seeking practices.

a. Socio-demographic characteristics

The major socio-demographic variables described were age, gender(men/women), religion, highest level of education (completed qualification), medium of instruction (Urdu/ Hindi/ English/others), Marital status (never married/married/ widow/widower/divorced/separated), whether spouse working with the e-waste, Migration status, Reason for migration (search for employment/others), categories of workers(workers processing both wires as well as one or more large items/workers processing only wires/workers processing only one or more large items), years of work e-waste.

b. Employment conditions

The major employment conditions variables described were registration and certificate or licensing for e-waste processing units, ownership of business (employer/employee), working days per week, working hours per day, number of holidays per week, wages (monthly/daily/weekly/others), accommodation and food expenses, training (received formal training/learned by observing others/started by my own/worked informally under someone), provision of personal protective equipment by employer, availability of first-aid kit, components of first aid kit (bandage/antiseptic/pain-killer/others), employers taking care of healthcare expenses in case of any injury/other illnesses to workers, workers' organisation.

c. Working conditions (Physical and ergonomics)

The major physical working conditions variables described were ways of processing e-waste (stripping or burning wire/dismantling/dismantling & stripping wire/others),

equipment used in processing e-waste, use of personal protective equipment (PPE) while working (never used/used sometimes/use always), types of PPE used (gloves/mask/goggle/shoes/others) reasons for not using PPE (not required/difficult to work with PPE on/others), reasons for wearing PPE sometimes (depends on e-waste/when work with machine/when burn wires/others), posture while working (no. of hours of continuous sitting at the workplace, no. of hours of continuous standing at the workplace, no. of times bending & lifting weight at the workplace, no. of times pushing & pulling heavy items at the workplace).

d. Occupational health problems

The major occupational health problems variables described were:

- Injuries (in the past two weeks preceding the survey and since the time workers have started working with e-waste) - body part injured, type of injury, reason for injury
- Musculoskeletal problems in the past one month
    - Neck trouble, whether neck trouble interfere with the ability to work, aspect of work getting affected
    - Shoulder/s trouble, trouble in which shoulder (right/left/both), whether shoulder/s trouble interfere with the ability to work, aspect of work getting affected
    - Low back trouble, whether neck trouble interfere with the ability to work, aspect of work getting affected
    - Hip trouble, trouble in which hip (right/left/both), whether hip/s trouble interfere with the ability to work, aspect of work getting affected
    - Knee trouble, trouble in which knee (right/left/both), whether knee/s trouble interfere with the ability to work, aspect of work getting affected
    - Ankle/foot trouble, trouble in which ankle/foot (right/left/both), whether ankle/foot trouble interfere with the ability to work, aspect of work getting affected
- Burn : Burn in the past one year, body part burned
- Eye problem : Eye problem in the past one month, type of eye problem (burning/itching/watering/others)

- Skin problem : Skin problem in the past one month, type of skin problem (itching/rashes/others)
- Breathing problem : Breathing problem in the past one month, type of breathing problem (cough/cough with sputum/breathing difficulty/chest pain/asthma/tuberculosis/others)

e. Healthcare seeking practices

The major healthcare seeking practices variables described were

- Health camp : whether workers had heard of health camps, whether they attended any health camp in the past six months, reasons for not attending health camp (why to go when nothing happens/no time to go/overcrowding as it is free/go directly to a private clinic/doctors do not treat properly/health camps are for elderly/others)
- Healthcare seeking practices for injury
    - What was done for injury (nothing/washed the injured part with water/ washed the injured part with water & tied a bandage or cloth/ washed the injured part with water, applied turmeric & tied a cloth or a bandage/consulted a doctor/others)
    - Healthcare facilities approached in case of injury (Govt. hospital/Private clinic/charitable clinic/others)
    - Reasons for seeking care in Gandhi hospital (serious injury/when the nearby private or charitable clinics are closed/others); reasons for seeking care in charitable clinic (convenient to go as doctors are available in evening time/no waiting time/doctor listens/others); reasons for seeking care in private clinics (convenient to go as doctors are available in every time (late night)/no waiting time/doctor listens/they do whatever we ask them to do/others)
    - TT injection in the past six months; no. of times it was taken, reasons for taking TT injection frequently (because of nature of work/because of pollution in the area/elderly used to tell that TT injection keeps us healthy/helps in wound healing/prevents spreading of infection

throughout the body/prevents rotting of hands, feet/others); healthcare facility approached for TT injection; amount paid.

- Healthcare facilities approached for musculoskeletal problems
- Healthcare facilities approached for skin problem

Bivariate analysis

- The association between age of workers, years of work, hours of work, ways of processing e-waste, training, personal protective equipment with the injury encountered in the past two years while working with e-waste was assessed through the difference in proportions between those who had encountered injury and those who did not encounter any injury in the past two years. Chi-square test was used to test the significance of difference in proportions.
- The association between ways of processing e-waste and personal protective equipment with the types of injury encountered in the past two years while working with e-waste was assessed through the difference in proportions between those who had cut and those who had encountered other types of injury in the past two years while working with e-waste across these independent variables. Chi-square test was used to test the significance of difference in proportions.
- The association between age of workers, hours of sitting, no. of times bending and lifting weight with low back trouble in the past one month through the difference in proportions between those who had trouble and those who did not have low back trouble across these independent variables. Chi-square test was used to test the significance of difference in proportions.

3.8.2 Observation and informal conversation

Along with the survey, observation and informal conversation were also carried out and a detailed field note was made regarding the same. The detailed observation list is attached in the annexure

3.8.3 Mapping of healthcare facilities

Mapping of various healthcare facilities including a tertiary care governmental hospital, ESI dispensary, UPHCs, private clinics, charitable clinics, and medical stores were carried out based on the reports by the workers as well as on the

observation. I attempted to map the location (latitude and longitude) using KoBoCollect app, a mobile app based on OpenDataKit, which can be used to collect information both online and offline. Unpredictable weather and shadiness at many places (predominantly near clinics and medical stores) made using the app difficult and, hence, I had to rely on google map to get data points (latitudes and longitudes). These data points were then utilized to plot maps using QGIS version 2.18, a free and open-source geographic information system software used for composing and exporting graphical maps as well as for analyzing and editing spatial information.

3.8.4 Qualitative exploration for policy analysis

The qualitative exploration for the policy analysis continued beyond 15th March 2020 and lasted till August 2020.

The relevant documents for policy analysis were mapped following desk review. Following this, I did a content analysis of the actions suggested in the three key policy documents. I also conducted in-depth interviews among various stakeholders.

3.8.4.1Selection of respondents

Initially, respondents were selected purposively based on the discussion with one of my Doctoral Advisory Committee members who had significant number of years of experience in working with the policy as well as environmental and occupational health. I reached to the subsequent respondents using snowball sampling technique i.e. I asked each respondent who else should I talk to cover the various dimensions I was exploring. In addition, I also utilized a few reports to reach the relevant respondents.

3.8.4.2 Respondents

The study respondents included members of two different Trade Unions of Hyderabad (one was the President another was the General Secretary); an official from the State Labour Department, Telangana; Program Manager, National Urban Health Mission, Hyderabad; Occupational health specialist, IIPH, Gandhinagar; an official from Toxic Links (NGO); Superintendent of Regional Employees' State Insurance Corporation, Hyderabad; Director General, Directorate General Factory Advisory Service and Labour Institute (DGFASLI); Occupational health activist.

3.8.4.3 Data collection

The study utilized semi-structured interview schedules to interview most of the respondents. The interviews were conducted both in-person and on telephone. Depending on the convenience of the respondents, either English or Hindi language was used for the interviews. I also had informal in-person conversation as well as e-mail exchanges with few of the respondents. The semi-structured interview schedules are attached in Annexures C – AXVI, AXVII, AXVIII, AXIX, AXX, AXXI, AXXII.

Out of seven in-depth interviews, four were conducted in person whereas three were conducted on phone. Out of three telephonic interviews, two were recorded, following the permission of the interviewees, and were transcribed verbatim. For all others, a detailed note on each interview was made immediately after the completion of the interview.

3.8.4.4 Data analysis

Data collection and analysis were carried out simultaneously. The recorded interviews were simultaneously translated and transcribed into English. The analysis was guided by WPR approach. I chose to reflect on first four out of six questions underlying this approach (described in detail in the literature review chapter) (Bacchi, 2014). While for the first three questions I utilized policy documents/reports, the fourth question was answered using both policy documents/reports as well as interviews with various stakeholders.

3.9 Bringing different methods from all the phases together

Based on my conceptual framework, I started with in-depth interviews, observation, and informal conversations to explore the health problems (which could be related to the occupation) and healthcare seeking practices of workers currently engaged in e-waste processing. I then explored their employment as well as working conditions using the same methods. Through in-depth interviews and informal conversations, I explored the historical background of Bholakpur with a focus on evolution of various occupational groups particularly workers processing e-waste. While the qualitative methods gave me a rich insight of the context, these also helped me in developing a structured interview schedule to quantify workers' occupational health problems, healthcare seeking practices, employment as well as working conditions. Further, in-

depth interviews and informal conversations among workers helped me in locating various healthcare facilities in and around e-waste processing units which I, then, mapped using google maps. All these data made me to look for the existing policies which should be addressing their occupational safety and healthcare needs. Putting all these data together helped me in viewing the holistic picture of occupational health of these workers in the study setting at three levels – micro level consisting of consisting of socio-demographic characteristics, employment conditions, working conditions, occupational health problems, healthcare seeking practices; meso levels consisting of institutional arrangements – labour system and healthcare system; and macro level consisting of historical background of study setting, labour and welfare policies (occupational safety and health). The following figure brings together various methods used in both the phases of data collection.

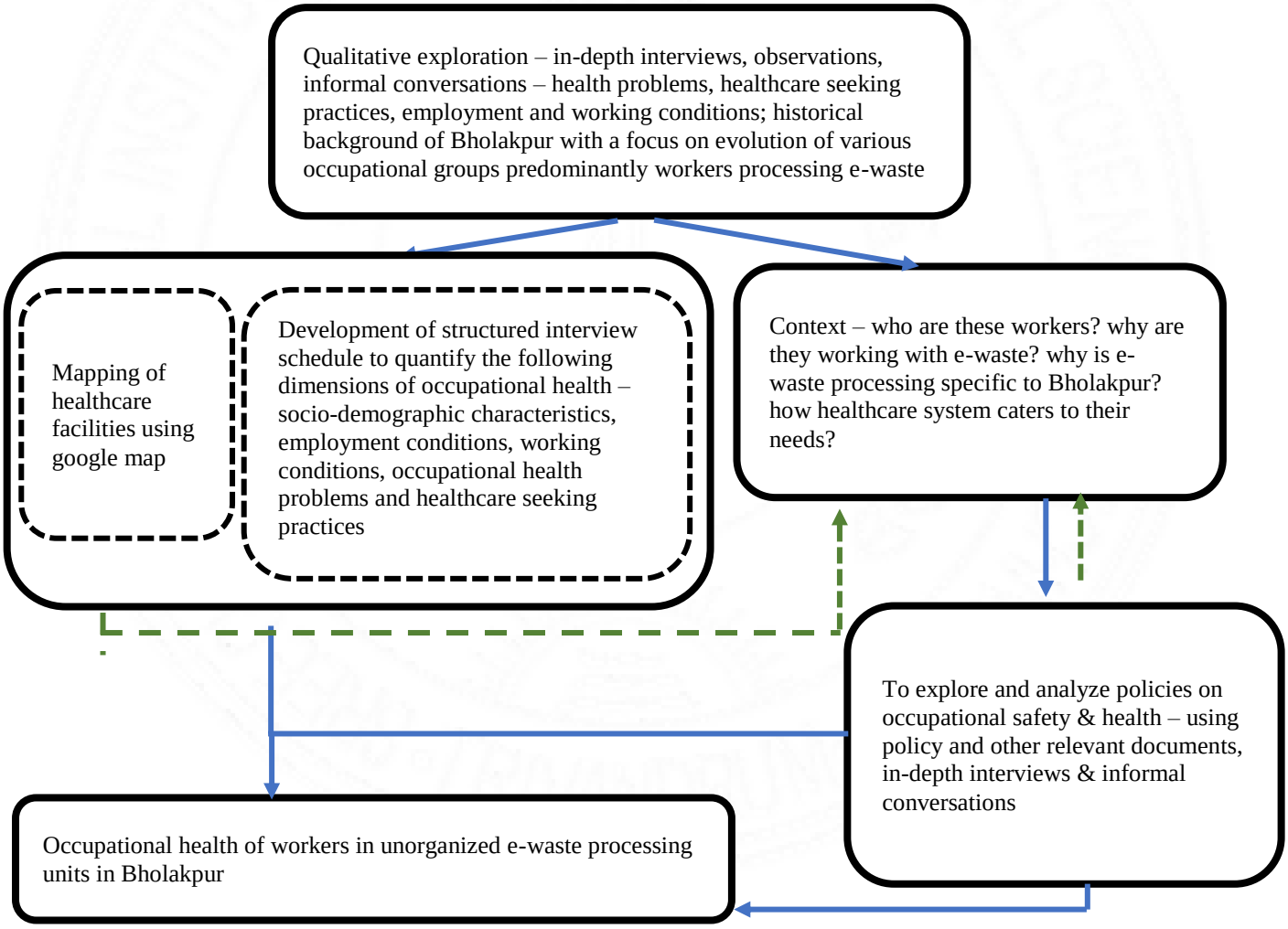

Fig. 3.3: collating methods of both the phases

CHAPTER 4: RESULTS

The results chapter has been divided into the following sections based on the conceptual framework (described in the section 3.2 in the Methodology chapter) – historical account of the research setting with a focus on occupation; socio-demographic profile of workers; employment and working conditions; occupational health problems; healthcare practices; and policies addressing the occupational safety and health of workers. I have presented my findings drawing on the data from the survey, in-depth interviews, non-participant observation as well as from document review. For the first sub-section i.e., historical account of the research setting with a focus on occupation, I have relied on in-depth interviews, informal conversations as well as on documents highlighting the history of Bholakpur.

I have presented the quantitative results first for every broad heading under each sub-chapter. To gain further insights about certain highly contextual aspects, the quantitative data has been described with the qualitative findings.

4.1: HISTORICAL ACCOUNT OF THE PLACE WITH A FOCUS ON OCCUPATION

I have started this section by describing how the research setting (where scrap work could be observed) looks like in the present and then have proceeded to explore how have the various occupational groups emerged in i.e., the occupational history of the research setting. I have described the history in two broad periods covering the present, and then going back to trace the evolution of the present from the past.

4.1.1 How do these slums look like in the present?

The findings from the observations, interviews and informal conversations revealed that Bholakpur ward under the Musheerabad circle of Hyderabad district, covered twenty registered slums. The ward was located on the main road connecting Hyderabad and Secunderabad. Out of twenty slums in Bholakpur, waste processing was observed to be confined to eight slums where waste was locally referred as "scrap". There were different entry points to these slums, I entered through one of those entries which had wide road at the beginning with few apartments on one side of this road. The presence of wide roads and apartments could be considered as a sign of so called 'development' happening in the Bholakpur. Further on, this road narrowed down to small lanes. Walking through these lanes one could observe

houses, leather processing units, trucks carrying or stranded with animals' hides, open drainage, e-waste processing units, plastic processing units, iron scrap units, eateries, meat shops, carpenter shops, medical stores, clinics, Mosques. These lanes appeared very lively to me with different people (predominantly males) performing different activities for their livelihood. There also lay a famous cloth market (one can buy clothes here at minimal price) which was observed opening in the afternoon, marking the presence of women on these lanes as they went shopping. Leather processing units were confined to four of the slums. A strong odor was prevailing everywhere as animals' blood was visible all over these lanes. These images appeared to dilute the 'development' which I observed at the entrance.

When it comes to waste processing units while I could observe plastic and iron processing units with nameboards, the same could not be observed for e-waste processing units (other than a couple of units). This could be indicative of non-recognition of these units by the state. The units looked cramped, stuffed with e-waste with work spilled on to the road.

4.1.2 Evolution and existence of different occupational groups in these slums

The findings from the interviews and documentary evidence revealed the persistence of a particular pattern of occupation in the research setting – replacement of the age-old practice of leather tanning by waste work.

Bholakpur, in its present stage, is the largest market for scrap/waste, providing livelihood to thousands. One could get a rough idea of the size of this market by merely observing the movement of hundreds of four-wheelers carrying different types of wasteevery day in and out of this area. The predominant sources for getting e-waste included small shops, hospitals, educational institutes as well as big companies. Further, the workers reported travelling to other states/cities to collect e-waste, among others. In many cases, they also received it from the formal recycling companies, who were collecting it through the tender process.

"My workers have gone to Mumbai, Goa, and Madras to get e-waste. It is different from other types of waste, and it comes mainly from big companies (he picked up a small itme and started explaining). This is a small piece of equipment that has different components like silver, gold, copper. It is very difficult for a recycling company to dismantle it using the machine, no single machine can remove all the

different components. In any effort of removing one component may result in damaging of another one. These companies collect e-waste through the tender process, and they forward those to businessmen like me. I can give you one example also: a recycling company in Madras collects e-waste from Samsung, Philips, LG, and others and give to other businessmen like me. These companies cannot do the work done by us." - [IDI16 – worker aged 24]

Exploring the reasons for the presence of this huge waste processing market in Bholakpur revealed that almost three decades ago it was renowned for leather tanneries. As leather work involved processing animal hides, the workforce predominantly consisted of members from the Muslim community and Dalit community as processing animal hides was considered (still considered) as a 'dirty' work and hence it was supposed to be carried out by the Muslim community or by the Dalits (Jonnalagadda, 2014a). The tanneries emerged when the British entered into business with the Deccani state during Nizam's rule. There were already leather industries in Chennai and Kanpur under the control of the British because they needed leather for their use. However, in the south India leather was generated in a small way – it was collected door to door, then shop to shop, then to the big storage. Like this leather from all the districts used to come to Hyderabad to Bholakpur. So buyers from Delhi, Chennai, Kanpur, and Kolkata used to come to purchase rawhide from Bholakpur. However, the lack of technology posed challenge to the tanning process. Gradually, people from Madras, with skill, expertise, and knowledge to tan the leather, started to enter (into the Nizam State) through Warangal. They came and settled outside the walled city – Hyderabad was constructed for a population for four lakh people only (Jonnalagadda, 2014b). Since this leather trade belonged mainly to Muslims, people started gathering here. The owners of tanneries were Muslims while the workers were Hindus. The workers belonged to the Warangal area and Tamil Nadu. It was a new population that came from outside, rather than inside Hyderabad. The political development during that period in the form of inadequate loan disbursement policy (loan disbursement policy was implemented for the welfare of poor people in the area) made people default on loans. As a result those who could not afford to pay back, predominantly members of the Dalit community, sold their

houses and left Bholakpur. This exodus of Dalit households was capitalized by the steadily in-flowing Muslim community (The presence of 'Badi Masjid', an age-old structure, was able to provide shelter to the incoming migrants, also a strong community network in the area made it a safe place). The community had leather processing as one of their predominant sources of occupation (Jonnalagadda, 2014b). However, the leather industry suffered a severe blow in the late 1980s and the early 1990s due to macro-level policy changes. The collapse of leather business severely affected the small businessmen and the labourers, they lost their livelihood as many of the tanneries were shut down. This compelled them to look for alternate livelihood options and hence, they started moving towards the waste trade - plastics, paper, and metal – another type of 'dirty' work carried out again by the Muslim community and the Dalit community. Though a few leather processing units could still be seen there, the number of workers was reported being declining.

"Leatherwork started getting affected around the early 1990s. It was also the period of economic loss as a result leather business got affected. Previously we used to get a 10% subsidy on the leather which was subsequently removed. For example, earlier we used to get 220 rupees for one goat's skin now it's only 20 rupees. Those who were in the leather business started facing huge losses. They had to struggle, they did not have anything to do for one-two years and, hence, they picked up scrap business." – [IDI19- General secretary of a welfare committee]

Being located at the heart of the city, the government is making continuous effort to relocate the inhabitants to the outskirts so that the space could be taken up by the government. For instance, the workers in the area have been labelled as 'pollution creators'. The cholera outbreak in 2009 in which more than ten people died (Sudhir, 2009) further pushed them into the fringe of marginalization as waste processing units (leather and others) were held responsible for the outbreak. However, on subsequent investigation it was found that the mixing of sewage water with the drinking water due to damaged pipelines was the reason for this outbreak (The New Indian Express, 2009). In spite of this, the workers are continued to be hold responsible for that outbreak and, hence, they need to be relocated to the outskirts of the city. To negotiate the issue of relocation various occupational groups have formed their own welfare committees. The workers would move provided the

government fulfills their demands which include the provision of basic facilities such as housing, electricity, a school for children, and most importantly the 'market' where they could continue their existing occupation.

"That incident was because of mixing of drainage water with drinking water. The government officials saved themselves by putting the blame on leather processing units. The problem was with pipelines, both drinking water pipeline and drainage water pipeline run parallel to each other." – [IDI10 – worker aged 36]

4.2: SOCIO-DEMOGRAPHIC PROFILE OF WORKERS CURRENTLY ENGAGED IN E-WASTE PROCESSING

The involvement of a huge workforce in waste processing work in the study area demands an exploration of who they are i.e., their socio-demographic profile. As the present study is focused on workers currently processing e-waste, I describe the socio-demographic profile of this group below:

In the study area, I found two broad categories of workers – adolescent males and adult males. The main part of this section focuses on the findings with reference to the adult male workers who constituted the majority. This includes data from a survey covering 248 individuals, in-depth interviews including 17 individuals as well as non-participant observation at their workplace. I could not formally include adolescents in the study due to ethical constraints, I, however, describe my observations, relevant material from the interviews of adult workers as well as informal conversations with the adolescents in a separate section.

Among the adults, I found only a negligible number of women (three), in both phases of the study, working with e-waste in the field area. I attempted to explore the reason and was informed that women would be working at their home. In-spite of numerous efforts I made in the form of visiting households in the community I could not track any. On further exploration it was found that women were working mostly with plastic waste. I describe the observations and findings with regards to women under a separate section.

Age

The median age of the workers was 28 years. A majority (40.3%) of them aged 24 years or less, indicating the predominance of young population in this work (Table 1).

Marital status of workers

More than half (55.5%) of the workers were married, out of which only one reported that his spouse worked with e-waste (Table 4.2.1).

Religion of workers

The members of the Muslim community were predominantly involved in processing e-waste (Table 4.2.1).

Educational status

The survey result showed that the majority (68%) of respondents had 10 or less years of schooling. Interestingly, 4.8% had more than 12 years of schooling. Majority (76.89%) had received education in vernacular medium. (Table 4.2.1).

The picture that emerged from the data as well as from the interviews was the nexus between poverty, education and e-waste processing. While most of the workers were young and with 10 or less years of schooling, it emerged that poverty was the main reason for the interruption of their education. Most of them joined this work through networks of friends and family who had previously or were currently processing e-waste. However, the interruption of their education and their poverty trapped them in this work as they have few skills and thus low scope of finding better employment. This was especially so in the general situation of unemployment and under-employment, which led even graduates to prefer to work with e-waste.

"*People over here do not get a chance to study much because of the financial problems. We have to start working at an early age so that we can take care of our family*." - [IDI8 – worker aged 23]

"If I go for a job, I would not be getting enough money to sustain my family. I am earning well with this scrap business." – [IDI3 – worker aged 26]

Age and education

The survey result indicated that younger workers were having better educational status than the older ones (Table 4.2.2).

Migration status

A small proportion (7.26%) of respondents were migrants from other states (Delhi, Maharashtra) as well as from another district (Zaheerabad) (Table 4.2.1). These included recent migrants as well as those who migrated five to ten years back in search of employment.

Inter-generational pattern of work

The local workers followed the footsteps of many of their family members, relatives, and friends, who had been processing e-waste for long. There were instances of the work being carried over by off-springs or members of subsequent generations.

"My father started this business, now he only supervises workers. I work here along with other hired workers." – [IDI8 – worker aged 23]

Previous occupation of workers

The picture which emerged from the interviews as well as from the observation indicated the relation between continuous decline in leather business with the government policies. Though a few leather processing units could still be found there (reason explained in the earlier section), the leather business continued to decline further and the major reason cited for this was the recent government restriction on cow slaughtering. The less profit margin in leather-work with respect to e-waste processing work had resulted in occupational mobility of workers to this work.

"Recently, my friend has to shift to scrap work as his leather business was completely destroyed because of the govt. restriction on leather work" – [IDI10 – worker aged 36]

Years of work with e-waste

The median number of years of work with e-waste among the workers was 7. However, 4% of them reported working for more than 20 years (Table 4.2.1), which indicates that e-waste processing had been prevalent in the area for more than two decades. The same was echoed by the workers in in-depth interviews.

" I am working with the scrap for twenty-five to thirty years. After working under someone for few years I gradually started my own business" – [IDI4 – worker aged 50]

Table 4.2.1 describes the socio-demographic characteristics of adult male workers currently engaged in e-waste processing – age group, marital status, religion, highest level of education, medium of instruction and years of work with e-waste

Table 4.2.1: Socio-demographic profile of adult male workers currently engaged in e-waste processing

	Proportion of respondents
Age group (n=247)	
18-24	100 (40.3%)
25-31	62 (25%)
32-38	38 (15.3%)
>38	48 (19.4%)
Marital status (n=247)	
Ever married	137 (55.5%)
Never married	110 (44.5%)
Religion (n=247)	
Muslim	246 (99.6%)
Highest level of education (n=247)	
No formal schooling	22 (9%)
Primary (class 1 – class 5)	62 (25.10%)
Upper Primary (class 6 – class 8)	64 (25.9%)
Secondary (class 9 – class 10)	68 (27.5%)
Intermediate (class 11 – class 12)	19 (7.7%)
Degree	12 (4.8%)
Medium of instruction (n=225)[1]	
Urdu	173 (76.89%)
English	37 (16.44%)
Telugu	10 (4.44%)
Hindi	3 (1.33%)
Marathi	2 (0.9%)
Years of work with e-waste (n=247)	
<=5	102 (41.3%)
6-10	86 (34.82%)
11-15	35 (14.17%)
16-20	14 (5.67%)
21-30	10 (4.04%)

[1]Denominator for Medium of instruction included only those respondents who had formal schooling

Table 4.2.2 describes the relationship between age and educational status of adult male workers currently engaged in e-waste processing

Table 4.2.2 : Age and educational status of adult male workers currently engaged in e-waste processing

	Educational status of workers						
Age	**No formal schooling**	**Primary**	**Upper primary**	**Secondary**	**Intermediate**	**Degree**	**Total**
18-24	6 (6%)	11 (11%)	31 (31%)	33 (33%)	11 (11%)	8 (8%)	100 (100%)
25-31	3 (4.8%)	18 (29%)	16 (25.8%)	14 (22.6%)	7 (11.3%)	4 (6.5%)	62 (100%)
32-38	3 (7.9%)	15 (39.5%)	9 (23.7%)	10 (26.3%)	1 (2.6%)	0 (0%)	38 (100%)
>38	11 (22.9%)	18 (37.5%)	8 (16.7%)	11 (22.9%)	0 (0%)	0 (0%)	48 (100%)

4.3: EMPLOYMENT AND WORKING CONDITIONS OF ADULT MALE WORKERS CURRENTLY ENGAGED IN E-WASTE PROCESSING

Based on the emerging importance of employment conditions as a key determinant of occupation health in addition to the actual working conditions (physical and ergonomic), I divide this section in two. One sub-section describes the employment conditions and the other the working conditions.

4.3.1 EMPLOYMENT CONDITIONS OF ADULT MALE WORKERS CURRENTLY ENGAGED IN E-WASTE PROCESSING

In this section, I present employment conditions of adult male workers currently engaged in e-waste processing from the cross-sectional survey, non-participant observation, in-depth interviews as well as from informal conversations.

4.3.1.1 Registration and certificate/licensing of e-waste processing units

The findings of the survey showed that only 3 (2%) out of 172 e-waste processing units were registered. The employers of these units got their units registered under GST (Goods and Services Tax). Out of 160 employers (who were also workers), 5 (3%) reported the requirement of a license to process e-waste.

The observation of only a negligible number of e-waste processing units with nameplates, an indicator of registration and therefore legal recognition, suggests the invisibleness of the same from the larger regulatory system. There was a consensus among the workers that registration would be required only for those units which create pollution, and because their work was not creating any pollution, so registration was not required.

"We do not need any registration for doing this work, we are not creating pollution." – [IDI4 – worker aged 50]

However, it was informed by the social worker that a certificate from the State Pollution Control Board (SPCB) would be required to deal with any kind of hazardous waste and e-waste being one among them should be processed only when the workers could obtain the same from the SPCB.

4.3.1.2 Types of employment

A majority (64.8%) of the workers reported owning as well as working at the e-waste processing units. This suggests the predominance of self-employment in unorganized e-waste processing sector in the study area (Table 4.3.1). Among these, a majority (62.5%) did not hire any worker, they were self-employed either alone or with their family members or friends. Often, they referred their friends as 'partners'.

The picture that emerged from the interviews revealed that the clear binary of employer-employee would not fit well with this type of occupation as it was predominantly carried out with the help of close contacts. The obscured/minimal existence of this binary further ruled out the need of any written contract which is a characteristic feature of organised sector or where a clear employer-employee relationship could be observed. The contract was found to be absent even among those workers who were hired by the employers and who were not close relatives of the employers. The absence of contract compelled and allowed the workers to

change their workplace frequently depending on the availability of work. This could be indicative of a type of employment which was largely based on community solidarity and not on the typical type of employment which is based on well written employment contract.

"We do not have any contract; no body over here has any type of contract with their owners." – [IDI11 – worker aged 26]

"*These workers are not permanent; they keep changing their workplace. Wherever they find work they move. They don't have any permanent employer*." – [IDI18 – social worker]

4.3.1.3 Working days, working hours and holidays in a week

Working days - Though the median number of working days per week was six, 14.5% (35 out of 241) of workers reported working for all days in a week with Friday as a half working day.

Working hours

(a) Working hours on full working days - The median number of hours of work on a full working day was nine. Approximately 17% (41 out of 245) of workers reported being working for ten hours or more on a full working day. However, the interviews revealed that their working hours were not fixed.

"I get up at 5 AM in the morning, go to collect scrap, comes back by 12 PM, have lunch and starts breaking the scrap. I don't have any fixed number of working hours" – [IDI2 – worker aged 36]

(b) Working hours on half working days - The median number of hours of work on a half working day was four. However, this was also not fixed.

Holiday

The workers who reported working for 6 days per week had holiday either on Friday or on Sunday.

The picture which emerged from the interviews as well as from the observation brought into light the extensive amount of time, concerning the number of hours per day as well as the number of days per week, the workers had to spend at the workplace to earn their livelihood. Taking a leave in a week did not seem to be possible for everyone as for them one day without working would mean one day without money, and this they could not afford. While I was informed that workers

would work for less number of hours almost for a month during 'Ramadan', a festival season which lasts for a month in which they would be observing fast without water and food for the entire day for a month, I observed a majority of them working while holding fast, as per their routine.

4.3.1.4 Wages

The survey result showed that the majority (51.7%) of the workers reported getting paid monthly (Table 3).

The picture that emerged from the interviews as well as from the observations revealed that there were no uniform wages paid to the workers, different workers reported getting wages at different time-points. These ranged between 7000-12000 INR, some received it daily, some weekly whereas some reported getting it on their demand. Wages for the workers was calculated based on their daily work, those who received monthly wages reported that even a single day off from the work would result in deduction from their wages. Different workers working under the same employer reported getting paid differently. The reasons for this difference included:

(a) Number of working hours per day - they were observed as well as reported working continuously without any rest period in between other than the lunch break. They were given an hour for lunch which included time for going home, having lunch there, and then coming back to work again. I had to conduct interviews while they were working without interrupting their work as any interruption in the work would have made their employers deduct their wages.

"You can see that they don't stop at any point in time, they keep working while talking to each other. They are not even bothering even when we are sitting here and discussing them. They will go for lunch when there is lunchtime." – [IDI18 – social worker]

"You (the researcher) should finish interviewing me fast otherwise my employer will deduct my payment if I sit without doing anything even for little time." – [IDI13 – migrant worker aged 18]

(b) Freshers getting lesser wages than their experienced counterparts - Workers, who recently started processing e-waste, reported getting lesser wages as compared to the experienced colleagues.

"See, he has joined here seven months back and he is still learning, so he is getting 7000 INR per month whereas I am working here for more than a year and I have become expert in doing certain things, so I get 10,000 INR per month." – [IDI14 – migrant worker aged 18]

(c) Working with chemicals fetch more money – Workers reported getting paid depending on the skill they had in processing e-waste, they informed getting paid extra on working with chemical which was considered a riskier work. The chemical was used to remove gold or silver-plating present inside the e-waste. This was predominantly reported among migrant workers.

"There are workers who use chemicals to remove silver and gold coating from e-waste and they are mostly from other states. They get paid more than the dismantlers as their work is risky. In-spite of knowing that this work poses a threat to their health they still work that too only for their livelihood. They think that now they are getting money which is required for survival." – [KII – a senior member of the community]

"My salary is 10,000 but I get paid extra whenever I have to work with chemicals." – [IDI15 – migrant worker aged 19]

4.3.1.5 Provision of accommodation and expenses for food to migrants workers

The findings of the survey revealed that two of the migrant workers, who were working under two different employers, were neither provided with accommodation nor with food expenses.

The only employer of one e-waste processing unit, interviewed during qualitative exploration, was providing for accommodation and food expenses to his migrant workers.

"We, four to five people, stay in one room, the room is not very spacious. The owner has provided us with accommodation. He also pays us for groceries. We get up early, cook breakfast and lunch, and reach here by 8 AM" – [IDI4 – migrant worker aged 18]

4.3.1.6 Training

The survey findings showed that none of the workers reported receiving any formal training for processing e-waste. A majority (58.13%) of them reported learning it by

observing others while 13.41% reported working under someone else before starting their own business (Table 4.3.1).

The picture which emerged from the interviews revealed that the workers had trained themselves in their ways to process e-waste. Since e-waste processing was happening in the area for more than three decades many of the young local workers, whose family members/relatives/friends were engaged in this work, had been observing this work since their childhood. Observation was the key for them to learn processing e-waste, they denied the requirement of any formal training for this work. However, a few of them reported getting trained informally under someone else before setting up their own business as they believed that some form of training was required for doing this work.

"I learned informally under someone for two years and then I started my own business. Two of my brothers are also working with the scrap, they have learned from me" – [IDI4 – worker aged 50]

4.3.1.7 Provision of personal protective equipment (PPE) by the employers

The survey findings showed that 30% of the employees reported the provision of PPE by their employers (predominantly gloves). They informed that their employers would replace PPE in case of any damage (Table 4.3.1).

4.3.1.8 First-aid kit in e-waste processing units

The survey findings showed that the availability of some kind of the first-aid component was reported in 50% of e-waste processing units with bandage and antiseptics (57%) being the commonest ones (Table 4.3.1).

The availability of some components of the first-aid kit – bandage, Dettol, and iodine - was reported by the workers in the interviews. However, on observation nothing other than the bandage could be found, that too, in a few units. Workers, in rest of the units with no first-aid component, reported getting bandage from the nearby medical stores following any injury. The proximity of medical stores to the units acted as a deterrent for keeping the first-aid kit in the units. A medical store could be seen in every street of all the selected slums. This could be indicative of the community's dependence on these private medical stores for their immediate healthcare needs.

"We don't keep anything in our shop. You see that medical store, we get bandage from there when we get injured." – [IDI7 – worker aged 20]

Interestingly, one of the employers (also a worker) reported applying generator oil (it is used as a lubricant in vehicles) on the injured part following a minor injury with a belief that the oil would prevent infection.

4.3.1.9 Washroom at workplace

I did not find any washroom facility (toilets/hand washing facilities) in any of the e-waste processing units.

4.3.1.10 Work-related social protection

Most of the workers (73.5%) reported that their employers would take of the immediate healthcare expenses in case of serious injury or health problems arising out of their work. (Table 3).

The picture which emerged from the interviews as well as from the observation brought into light the plight of workers regarding the healthcare expenses. Not all employers would take care of the employees' healthcare expenses, though a few of them would contribute to some extent but only if workers encounter a serious injury at the workplace. Also, there was no concept of paid leave. This got further verified on observing a few of them working with the injured part and the major reason cited was the deduction from their wages on taking leave.

"I cannot afford to take leave irrespective of whatever happens to me as I am the sole bread earner in my family." – [IDI8 – worker aged 23]

Many of them were enrolled in the state's run health insurance scheme that covers emergency/serious conditions requiring hospitalization. However, it appeared to be of no use to them as they could not afford to get hospitalized even for a day unless they develop some life-threatening condition. This raises doubt on the relevance of in-patient based health insurance system in a context where there is a huge demand for outpatient care on a regular basis, the obvious reason is the type of work they are engaged with, which is not covered under any health insurance scheme.

"What is the use of having this card to me! It is only for hospitalization." – [IDI4 – worker aged 50]

4.3.1.11 Workers' organization

A small percentage (6.5%) of workers reported the existence of a welfare committee/society for them. Out of this, 47% (7 out of 15) had membership in the committee/society, and 86% (6 out of 7) of those with membership reported paying a membership fee of 100 INR per month towards the committee/society (Table 4.3.1).

The interviews as well as observation revealed the powerlessness of workers in making their voices heard. There were welfare societies for different types of waste workers – iron, steel, plastic. However, these societies were meant to discuss the trade-related issue rather than focusing on the welfare of workers. A certificate from the welfare society confirmed one's membership. The committee had stopped intake of any new members and the shortage of fund was the major reason cited. Unlike workers who process plastic or iron waste, workers processing e-waste (other than those who process wires and that too, not all) had no separate organization that represented them or looked after their welfare.

"Plastic welfare society is only for traders. It does not do anything for workers. All these societies (plastic scrap, iron scrap) are only for traders and not for workers. Sometimes they conduct programs, but they don't focus on labor welfare or making business cooperative. You should see, who are the members of this Society…… Traders!!.... then! now you tell whether they will see their trade or work for the welfare of workers?" – [IDI18 - social worker]

However, an effort was made a few years back to form a separate committee/society for workers processing e-waste, it did come into existence but could hardly function for a week.

"A few years back we formed a separate committee for electrical/electronic scrap workers, but it could not sustain for more than a week, nobody was ready to take any responsibility. For example, in case of any police action nobody would come forward to save the person" – [IDI16 – worker aged 24]

Table 4.3.1 describes the employment conditions of adult male workers currently engaged in e-waste processing – type of employment, wages at different time-points, training, provision of PPE by the employer, employer taking care of healthcare expenses, workers' organization, registered units, availability of some kind of first-aid kit, components of first-aid kit.

Table 4.3.1 : Employment conditions of adult male workers currently engaged in e-waste processing

	Proportion of respondents
Type of employment (n=247)	
Self-employment	160 (64.8%)
Wage employment	87 (35.2%)
Wages at different time-points (n=87)[1]	
Monthly	45 (51.7%)
Daily	26 (30%)
Weekly	5 (5.7%)
Others	11 (12.6%)
Training (n=246)[2]	
No formal training	0 (0%)
Learned by observing others	143 (58.13%)
Learned by themselves	70 (28.46%)
Learned by working informally under someone	33 (13.41%)
Provision of PPE by the employer (n=85)[3]	
Yes	26 (30.6%)
No	59 (69.4%)
Employer taking care of healthcare expenses (n=87)	
Yes	64 (73.5%)
Workers' organization[4]	
Any organization for workers (n=244)	15 (6.5%)
Membership in the organization (n=15)	7 (47%)
Pay membership fee (n=7)	6 (86%)
	Proportion of units
Registered units (n=172)	3 (2%)
Availability of some kind of first-aid kit (n=172)	86 (50%)
Component of first-aid kit (n=86)[5]	
Bandage + Antiseptic	49 (57%)
Only bandage	26 (30%)
Only antiseptic	7 (8%)
Bandage + Antiseptic + Pain-killer	2 (2%)
Others (generator oil, ointment)	2 (2%)

[1]Denominator for 'wages at different time-points' consisted of only hired workers
[2]One value was missing for 'Training' so denominator for this category was 246
[3]Denominator for 'Provision of PPE by the employers' consisted of only hired workers for which two values were missing
[4]Three values were missing for 'Workers' Organization' so the denominator for this category was 244
[5]Denominator for 'Component of first-aid kit' consisted of only those units which reported availability of some-kind of first-aid kit

4.3.2 WORKING CONDITIONS OF ADULT MALE WORKERS CURRENTLY ENGAGED IN E-WASTE PROCESSING

In this sub-section, I present the working conditions of adult male workers currently engaged in e-waste processing which emerged from the cross-sectional survey, non-participant observation, and from in-depth interviews.

4.3.2.1 PHYSICAL WORKING CONDITIONS

Workspace

The survey result showed that most of the workers (96.35%) were working in e-waste processing units whereas a small percentage (3.6%) did not have any permanent structure to carry on their work (Table 4.3.2), and hence they had to sit on the roadside to process the waste.

The picture that emerged from the interviews as well as from the observations revealed workers' everyday struggle of processing e-waste. They were observed to be sitting amid mounds of stored waste to do their work. Work spilled over to the roads outside the units, as the insides were cramped and filled with stored waste. The cramped nature of the workplace could further be illustrated from the fact that all these units were windowless rooms, with no ventilation other than the entrance as well as no enough lighting. Many-a-times the work was carried inside the dark room with minimal lighting. In addition to this, the seasonal factor further posed challenge in carrying out the routine work.

"On other days we sit on the road and work but during the rainy season somehow we have to find some space somewhere as my shop is too small to accommodate all of us. It has only the space to store scrap." – [IDI4 – worker aged 50]

The surroundings of the units were equally utilised as much as of the inner space to store the waste which often resulted in congestion of traffic prompting frequent police action.

"The police keep visiting this area and do not let workers sit on the road and work." – [IDI16 – worker aged 24]

e-waste processing units in rented spaces

All e-waste processing units were located in rented spaces. The number of workers in the units ranged from a minimum of one to maximum of seventeen with

approximately 28.5% of the units manned by a single person, the commonest category (Table 4.3.2).

Ways of processing e-waste

The survey finding showed that a majority (40%) of the workers were involved in both dismantling of small or large e-waste such as switches, mobile phones, printed circuit boards, television, refrigerator as well as stripping or burning of wire, 1% of them also reported using chemicals to remove metal (gold/silver/copper) from the printed circuit board (Table 4.3.2).

The picture which emerged from the interviews as well as from the observation revealed dismantling along with stripping as major types of activity workers were engaged in while processing e-waste. The process of dismantling involved breaking the items manually into small pieces by using hammer/chisel/screwdriver to obtain metals, plastic. Depending on the type, wires were stripped either manually or mechanically. While the thick ones were stripped manually using knife/paper cutter/blade, machine was used to strip thin wires. However, not everyone could afford buying a machine as one had to pay approximately 40,000 INR, and hence they would rent it from others. There were also wires, which workers reported too thin to strip manually or mechanically and, hence, were burned to obtain the metals. The workers reported burning wires outside the city, mostly in a forest or agricultural land. This got further confirmed through a video (shown by one of the respondents) in which a group of workers could be observed burning wires in a forest area. They preferred burning wires in the evening so that no one could catch them. However, on a few occasions, I observed them burning wires as well as an electric motor nearby their units. A negligible number reported using chemicals to extract metals.

"Chemicals such as pure water and nitric acid are used to remove gold and silver coating. They are also used to remove gold, copper and silver from printed circuit boards." – [IDI16 – worker aged 24]

However, this could have been grossly under-reported due to the fact that working with chemicals is considered illegal, and hence nobody would reveal the same.

"Using chemical is illegal, workers use it secretly." – [IDI15 – worker aged 19]

Though a majority of them reported buying e-waste from the collectors (collectors were only involved in collecting e-waste from shops/companies and selling those to

the workers in the area), a small number of workers were engaged in both collection as well as dismantling.

"I wake up early in the morning (at 4 AM), go to the city to collect scrap, come back by 12.30 PM, and then start breaking it." – [IDI13 – worker aged 24]

Personal safety while processing e-waste

A majority (65%) of workers (both employers as well as employees) in the survey reported never using any personal protective (PPE) equipment while working whereas 31% mentioned using it sometimes. Gloves were the commonest (63%) PPE reported by those who mentioned using any safety equipment (Table 4.3.2).

Among those who reported never using any PPE, a majority (83%) of them believed that it is not required for processing e-waste. Among those who reported using it sometimes, a majority (61%) of them cited the type of e-waste they had to process to be the reason (Table 4.3.2).

The picture which emerged from the interviews as well as from observation brought into light the workers' understanding of safety equipment. There was a consensus among workers that no safety equipment was required for processing e-waste as using safety equipment would slow down their work. Moreover, wearing gloves would make it difficult to hold the equipment with a firm grip thereby making the equipment slip while breaking the e-waste.

"If they wear hand gloves, they won't be able to work properly. The work gets finished in one hour without gloves, with gloves the same work will take two hours will take 2 hours." – [IDI18 - social worker]

"The faster you work with chemical the better it is otherwise it will damage the metal and so if I wear mask/glove how would I work." – [IDI17 – worker aged 60]

The workers were observed wearing the same clothes repeatedly for two to three days. In many instances, the clothes were torn and appeared 'dirty'. A negligible number (three or four) could be observed with woolen gloves while processing e-waste during my entire data collection period. In one instance, a worker was wearing it only in one hand while he was stripping wires using the machine. In another instance, two of them were observed with gloves while they were picking up metal that remained after wires were burned, one among them was wearing torn gloves. The gloves were used predominantly while working with certain types of wire which

has chemical inside such as telephone cables. The presence of white or black colored powder like substance was observed on forearms, hands as well as on feet of the workers.

"See, the powder is present inside the wire, this is chemical, and it is not good for health." – [IDI8 – worker aged 23 picked a wire from the floor, stripped it, and explained]

4.3.2.2 ERGONOMIC CONDITIONS

Posture while working

Sitting position - The median number of hours of continuous sitting while working on an average working day was three. Predominantly, they were observed to be sitting on the floor whereas in a few instances use of a low-lying stool/chair could be observed. Those engaged in stripping wires using machine were observed to be utilizing low-lying stool/chair at their workplace. Repeated bending of neck as well as repeated movement at wrist while breaking e-waste were the commonest repetitive movements observed mostly among the dismantlers.

"I sit for two and a half hours continuously, then get up and walk a little and sit back to work again." – [IDI12 – worker aged 26]

Standing position - The median number of hours of continuous standing while working on an average working day was two. The thick cable wires were observed to be stripped in standing position.

Bending and lifting heavy object – A majority (56%) of the workers reported bending and lifting heavy object such as bundle of thick wires (telephone cable), refrigerator, washing machine etc. at the workplace least once every day on an average working day (Table 4.3.2). Their facial expression while bending and lifting the object could be indicative of the heaviness of the object.

"I lift at least 50 kg weight every day." – [IDI5 - worker aged 26]

4.3.2.3 NO OFFICIAL TO MONITOR WORKING CONDITIONS

I spent almost seven months in the study area however I could not observe any health inspectors or anyone from the labour department conducting inspection there. A couple of workers reported that officials from labour department do come there to check for child labour. Instead of taking any action they ask money from employers on finding minors involvement in the work including processing of e-waste.

Table 4.3.2 describes the working conditions of adult male workers currently engaged in e-waste processing – workspace, ways of processing e-waste, personal protective equipment, reasons given by workers for non-use of PPE, reasons given by workers for using PPE sometimes, and posture – no. of times bending and lifting heavy object at workplace on an average working day.

Table 4.3.2 : Working conditions of adult male workers currently engaged in e-waste processing

	Proportion of units
No. of workers per unit (n=172)	
One	49 (28.5%)
Two	46 (26.7%)
Three	29 (16.9%)
Four	21(12.2%)
Five	13 (7.6%)
Six or more than six	14 (8.1%)
	Proportion of respondents
Workspace	
Workers working in units	238 (96.35%)
Workers not having any permanent structure to work under	9 (3.65%)
Ways of processing e-waste (n=247)	
Dismantling + stripping/burning wire	98 (39.5%)
Stripping or burning wire	77 (31.5%)
Dismantling	69 (28%)
Others (using chemicals + dismantling + stripping/ burning wire)	3 (1%)
Personal Protective Equipment (PPE) (n=246)[1]	
Never used by the workers	160 (65%)
Used sometimes	77 (31%)
Used always	9 (4%)
Reasons given by workers for non-use of PPE[2]	
PPE not required (n=160)	133
Difficult to work with PPE on (n=160)	57
Others (n=160)	8
Reasons given by workers for using PPE sometimes (n=75)[3]	
Depending on the types of e-waste	46 (61%)
When work with machine	15 (20%)

When burn wires	8 (11%)
Others (Difficult to work with PPE on, when breaks tube-light, when works with acid)	6 (8%)
Posture – No. of times bending & lifting heavy object at the workplace on an average working day (n=244)[4]	
At least once every day	137 (56%)
Occasionally (not every day)	86 (35%)
Do not do	21 (9%)

[1]There was one missing value under 'Personal Protective Equipment' category

[2]percentage of each of the component for 'Reasons given by workers for non-use of PPE' was calculated from those who reported never using PPE

[3]percentage was calculated from a total of 75 (from 'used sometimes' category). Two values were missing for this variable

[4]There were three missing values under 'Posture – No. of times bending & lifting heavy weight at the workplace on an average working day

4.4: OCCUPATIONAL HEALTH PROBLEMS ADULT MALE WORKERS CURRENTLY ENGAGED IN E-WASTE PROCESSING

The type of employment and working conditions the workers were engaged in e-waste processing would have bearing on their health. In this section I present the occupational health problems of adult male workers currently engaged in e-waste processing from the cross-sectional survey, non-participant observation, and from in-depth interviews.

A few workers reported encountering various health problems such as cough, stomach infection, skin allergy, and low back pain during the initial days of their work with e-waste. However, gradually they got habituated with the work and so it had stopped bothering them. This indicates that workers had no other choice than to continue with this work in spite of having health problems.

"*See, the powder which comes out on breaking it creates problems. Because we are used to it, we do not have problems but as you are not from this place you may have a problem because of the pollution over here."* - [IDI8 – worker aged 23 worker picked an immersion rod (used to warm water) and described].

However, the following health problems, as encountered by the workers while working with e-waste, emerged from the survey, interviews, and non-participant observation.

4.4.1 Occupational injury

Injuries encountered by the workers in the past two weeks preceding the survey

The findings consisted of both severe as well as minor injuries as workers could recall both because of the shorter recall period.

The survey results showed that 17% (41 out of 245) of workers reported encountering injury in the past two weeks preceding the study, among them 85% reported encountering one episode of injury. A majority (37%) of them reported encountering injury of finger, and cut was reported to be the commonest type (60%) of injury. A majority (48.57%) of them reported getting injured while dismantling e-waste (Table 4.4.1).

15% of workers reported encountering two episodes of injury in the past two weeks with finger being the commonest injured part, and cut being the commonest type of injury. They reported dismantling of e-waste to be the commonest activity causing injury.

Injuries encountered by workers in the past two years preceding the survey

The findings in this section consisted of only severe injuries that workers reported encountering in the past two years. Because of the long recall period, they could only remember severe injuries which had left scar on their body.

The survey results showed that 41% (101 out of 244) of the workers reported encountering injury in the past two years. Among them, 94% reported encountering one episode of injury. A majority (36%) of them reported encountering injury of finger and cut was reported to be the commonest type (71.6%) of injury. A majority (46.3%%) of them reported getting injured while stripping the wires (Table 4.4.1).

6% of workers reported encountering more than one episode of injury with finger being the commonest injured part and cut being the commonest type of injury. They reported dismantling of e-waste to be the commonest activity causing injury.

Workers came up with their own categorization of injuries which emerged from the interviews as well as from the observation. They categorized injuries as ‘normal’ or ‘severe’. They were routinely getting injured, and the major reason cited was the

nature of their work. The injuries are so common that they care about these injuries only when these are "severe".

"See this, I got this cut in the morning. It will heal by itself; I don't do anything for this type of injury. Now, I am used to such injuries (pointing to heel)" – [IDI15 – migrant worker aged 19]

On observation, however, it appeared to be a deep cut. There were many similar instances where they could be observed working with fresh injuries that were bleeding. In one instance, a worker injured his right ankle while dismantling. The injured part was bleeding but he did not do anything for it. In another instance, a worker's index finger was about to go into the wire-cutting machine while he was stripping wire, but he somehow managed to prevent this accident, had a minor injury (skin of index's finger was peeled off). The scar marks could be observed on workers' body part predominantly on palms, fingers, forearm, foot, leg, and knee. Also, the deformity of fingers (index and middle) were observed in a few workers. They preferred consulting healthcare providers for those injuries which interfered with their ability to work on a routine working day.

"I injured one of my eyes 4 months back while breaking motor, I went to a nearby private clinic and got eye-drops. I could not work for two days." – [IDI8 – worker aged 23]

The healthcare providers in the area also associated the injuries encountered by the workers with the type of work they were doing.

"Cuts are frequent when they strip wires using the knife. There are cases of hand injuries also. Crush injuries are common when they use a hammer to dismantle the scrap. Amputation of fingers results from the machine which is used to cut the wires. So, injuries of hands and toes are common in scrap workers. There are cases of eye injuries also because of foreign body impaction." – [IDI20 – a healthcare provider]

4.4.2 Musculoskeletal problem(s)

Body ache as 'normal'

The workers complained of body ache, in general. They labelled their body ache as 'normal', it was a regular thing for them.

"I do not feel pain while at work, I feel pain on every day after I finish work." – [IDI12 – worker aged 26]

Neck trouble in the past one month

The survey results showed that 6% (15 out of 245) of workers reported having neck trouble in the past one month. 11 out of 15 mentioned that neck trouble interfered with their ability to work and bending neck while dismantling e-waste (7 out of 11) was the most common aspect of work reported to be getting affected (Table 4.4.1).

Shoulder trouble in the past one month

The survey results showed that 5% (12 out of 245) of workers reported having shoulder trouble in the past one month; 8 out of 12 reported having trouble in both shoulders. 5 out of 12 mentioned that shoulder/s trouble interfered with their ability to lift heavy object (Table 4.4.1).

The major cited reason for the shoulder trouble, which emerged from interviews, was the lifting of heavy object at the workplace.

Low back trouble in the past one month

The survey results showed that 41% (101 out of 245) of the workers reported having low back trouble in the past one month. 55% (56 out of 101) of them mentioned that low back trouble interfered with their ability to work and sitting while working was (41 out of 56) the most common aspect of work reported to be getting affected (Table 4.4.1).

The major cited reason for the low back trouble, which emerged from interviews, was prolonged sitting as well as bending & lifting heavy object at workplace.

"I suddenly developed severe low back pain in the last month as I lifted something very heavy at my workplace, it's persisting till today. It pains more when I bend and lift scrap It is a disc problem. Doctor told me that you are too young to develop this problem." – [IDI6 – worker aged 29]

Prevalence of any of musculoskeletal problem (Neck trouble/shoulder trouble/low back trouble) in the past one month

The survey results showed that 45% (111 out of 245) of workers reported having any of the above three Musculo-skeletal problem in the past one month (Table 4.4.1)**.**

Others

A negligible number of them reported having knee trouble (3 out of 245) as well as ankle/foot trouble (1 out of 245) in the past one month.

4.4.3 Burn

The survey findings showed that 2% (5 out of 245) of workers reported encountering burn in the past one year. 3 out of 5 reported encountering burn while burning wires whereas 2 reported encountering burn while using chemicals at the workplace (Table 4.4.1). The hand was the commonest part reported getting burned.

The major cited reasons for the burn, which emerged from interviews, were use of chemicals and burning of wires.

"I keep encountering burn while using acids to treat circuit boards. I only work with chemicals as I have enough experience "Whenever I encounter burn my skin becomes red following which bubbles are formed. These bubbles rupture in two-three days and then new skin starts appearing."- [IDI17 – worker aged 60]

4.4.4 Eye problem(s)

The survey findings showed that 6.5% (16 out of 245) of workers reported encountering eye/s problems in the past one month with watering of eyes (11 out of 16) being the commonest one. (Table 4.4.1)

The major cited reason for eye problems, which emerged from interviews, was the presence of chemical inside the wires, which troubles the eyes.

"My eyes itch, and water come out when I strip the wire, maybe because of the powder which is present inside the wire." – [IDI8 – worker aged 23]

4.4.5 Skin problem(s)

The survey findings showed that 13% (32 out of 245) of workers reported having skin problems in the past one month with itching (31 out of 32) being the commonest one. (Table 4.4.1)

The main reason cited by the workers for their skin problem, which emerged from interviews, was working with certain types of e-waste.

"Working with telephone cable causes itching following which fluid-filled blisters are formed which cause a burning sensation. Blisters persist for 1-2 days then disappear." – [IDI9 – worker aged 26]

"I have skin allergy, it flares up (in the form of itching) whenever I touch my body part, after working with scrap, without washing my hands." – [IDI8 – worker aged 23]

The healthcare providers in the area also associated the skin problems encountered by the workers with the type of work they were doing.

"These workers develop allergy and eczema because of the exposure to the chemicals. They work in unhygienic working conditions" – [IDI20 – a healthcare provider]

4.4.6 Other health problems

Breathing problems

The survey findings showed that 2% (5 out of 245) of workers reported breathing difficulty in the past one month (Table 4.4.1).

The reasons cited by the workers for the breathing difficulty, which emerged from interviews, included the use of chemicals to extract metals from e-waste and the dust at their workplace.

"My chest burns, and I cough whenever I work with chemical, but these happen only for a short duration."– [IDI15 – migrant worker aged 19]

"I have asthma, it flares up maybe because of the dust at the workplace." – [IDI8 – worker aged 23]

Interestingly, the general secretary of the plastic welfare committee believed that the dismantling of refrigerator causes tuberculosis. He described that the gas present inside the refrigerator causes tuberculosis, and the dismantlers inhale this gas while working which put them at a higher risk of developing the disease.

Gastrointestinal problems

The survey findings showed that 7% (17 out of 245) of workers reported having stomach related issues in the past month with burning sensation in the stomach being the commonest one (15 out of 17) (Table 4.4.1). The reasons cited by the workers for the stomach related issues, which emerged from interviews, was the nature of their work. The same was also confirmed by the healthcare providers who associated stomach-related issues with the use of chemicals at the workplace.

Table 4.4.1 describes the occupational health problems encountered by currently working adult male workers– injuries in the past two weeks, injuries encountered in the past two years, musculoskeletal problems in the past one month, eye problem/s in the past one month, skin problem/s in the past one month, breathing difficulty in the past one month, gastro-intestinal problem/s in the past one month.

Table 4.4.1: Occupational health problems of adult male workers currently engaged in e-waste processing

	Proportion of respondents
Injuries in the past two weeks	
Injuries encountered by the workers (n=245)[1]	41 (17%)
No. of episodes of injury (n=41)	
One	35 (85%)
Two	6 (15%)
Body part/s injured (n=35)	
Finger	13 (37%)
Foot	9 (26%)
Hand	7 (20%)
Others	6 (17%)
Types of injury (n=35)	
Cut	21 (60%)
Swelling	9 (26%)
Crush	3 (8%)
Others	2 (6%)
Activities causing injury (n=35)	
Dismantling of e-waste	17 (48.6%)
Lifting of e-waste	12 (34.3%)
Stripping of wire	6 (17.1%)

	Proportion of respondents
Injuries encountered by workers in the past two years	
Injuries encountered by the workers (n=244)[2]	101 (41%)
No. of episodes of injury (n=101)	
One	95 (94%)
More than one	6 (6%)
Body part/s injured (n=95)	
Finger	34 (36%)
Hand	23 (24%)
Foot	11 (12%)
Forearm	8 (8%)
Eye	7 (7%)
Others	12 (13%)
Types of injury (n=95)	
Cut	68 (71.6%)
Crush	11 (11.6%)
Swelling	9 (9.4%)
Others	7 (7.4%)
Activities causing injuries (n=95)	
Stripping of wire	44 (46.3%)
Dismantling of e-waste	32 (33.7%)
Lifting of e-waste	19 (20%)
Musculoskeletal problems[3]	
Neck trouble	
Neck trouble in the past one month (n=245)	15 (6%)
Whether neck trouble interfered with the ability to work (n=15)	11 (73%)
Aspect of work got affected (n=11)	
Bending neck while dismantling e-waste	7 (63.6%)
Bending neck while stripping wire	2 (18.2%)
Lifting e-waste	2 (18.2%)
Shoulder trouble	
Shoulder trouble in the past one month (n=245)	12 (5%)
Trouble in which shoulder (n=12)	
Both	8 (66.7%)
Only one	4 (33.3%)
Whether shoulder trouble interfered with the ability to work (n=12)	5 (42%)
Aspect of work got affected (n=5)	
Lifting e-waste	5 (100%)

Low back trouble	
Low back trouble in the past one month (n=245)	101 (41%)
Whether low back trouble interfered with the ability to work (n=101)	56 (55.4%)
Aspect of work got affected (n=56)	
Sitting while working	41 (73.2%)
Sitting, bending forward to lift e-waste	7 (12.5%)
Others (bending forward to lift e-waste, getting up from sitting position)	8 (14.3%)
Eye problems	
Encountered eye problem/s in the past one month (n=245)[4]	16 (6.5%)
Types of eye problem	
Watering of eyes (n=16)	11 (68.75%)
Burning (n=16)	7 (43.75%)
Itching (n=16)	5 (31.25%)
Skin problems	
Encountered skin problem/s in the past one month (n=245)[5]	32 (13%)
Types of skin problem	
Itching (n=32)	31 (96.8%)
Rashes or blisters (n=32)	5 (15.6%)
Breathing difficulty in the past one month (n=245)[6]	5 (2%)
Gastro-intestinal problem/s	
Encountered gastro-intestinal problem/s in the past one month (n=245)[7]	17 (7%)
Types of gastro-intestinal problem/s	
Burning sensation in the stomach (n=17)	15 (88%)
Loose motion (n=17)	3 (17.6%)

[1]There were two missing values for 'injuries encountered by the workers'
[2]There were three missing values for 'injuries encountered by the workers'
[3]There were two missing values for all categories of musculoskeletal problems
[4]There were two missing values for 'encountered eye problem/s in the past one month'
[5]There were two missing values for 'encountered skin problem/s in the past one month'
[6]There were two missing values for 'breathing difficulty in the past one month'
[7]There were two missing values for 'encountered gastro-intestinal problem/s in the past one month'

Association of injury encountered in the past two years with age, years of work, hours of work, ways of processing e-waste, training, PPE - The survey attempted to find association of injury encountered in the past two years with age, years of work, hours of work, ways of processing e-waste, training, PPE. A statistically significant association could be found between hours of work and injury encountered in the past two years (p-value – 0.01963) (Table 4.4.2).

Association between types of injury (Cuts Vs others) with ways of processing e-waste and PPE - The survey also attempted to find association between types of injury (Cuts Vs others) with ways of processing e-waste and PPE however no statistically significant association could be found (Table 4.4.3).

Association between low back trouble with hours of sitting; no. of times bending and lifting heavy weight at workplace - The survey attempted to find association of low back trouble with hours of sitting; no. of times bending and lifting e-waste at workplace. A statistically significant association was found between Low back trouble and no. of times bending and lifting e-waste at workplace (p-value – 0.004) (Table 4.4.4).

Table 4.4.2: Association of injury encountered in the past two years with age, years of work, hours of work, ways of processing e-waste, training, PPE

Variables	**subgroups**	**Encountered injury in the past two years** (n=101)	**Did not encounter any injury in the past two years** (n=144)	**Chi-square**	**P-value**
Age	18-27	52 (57%)	70 (43%)	4.6876	0.09
	28-37	34 (48%)	37 (52%)		
	>37	15 (29%)	37 (71%)		
Years of work	<=5	40 (40%)	61 (60%)	0.41693	0.8118
	6-10	35 (41%)	50 (59%)		
	>10	26 (45%)	32 (55%)		
Hours of work	<=9	74 (37%)	124 (63%)	5.4441	**0.01963***
	>9	24 (58.5%)	17 (41.5%)		
Ways of processing e-waste	Dismantling + stripping/burning wire	43 (44%)	55 (56%)	3.2214	0.1997
	Dismantling	22 (32%)	46 (68%)		
	Stripping/burning	35 (46%)	41(54%)		
Training	Observed others	54 (38%)	87 (62%)	1.1755	0.55
	Started by own	32 (45%)	39 (55%)		
	Worked informally under someone	15 (45.5%)	18 (54.5%)		
PPE	Used (always + sometimes)	32 (37%)	53 (63%)	0.47998	0.4884
	Did not use	69 (43%)	91(57%)		

Table 4.4.3: Association between types of injury (Cuts Vs others) with ways of processing e-waste and PPE

Variables	**subgroups**	**Cuts** (n=71)	**Others** (n=29)	**Chi-square**	**P-value**
Ways of processing e-waste	Dismantling + stripping/burning wire	35 (81%)	8 (19%)	3.5179	0.1722
	Dismantling	14 (64%)	8 (36%)		
	Stripping/burning	22 (65%)	12 (35%)		
PPE	Used (always + sometimes)	20 (64.5%)	11(35.5%)	0.51771	0.4718
	Never used	51 (74%)	18 (26%)		

Table 4.4.4: Association between low back trouble with age; hours of sitting; no. of times bending and lifting heavy weight at workplace.

Variables	**subgroups**	**Low back trouble** (n=101)	**No low back trouble** (n=145)	**Chi-square**	**P-value**
Age	18-27	50 (41%)	72 (59%)	2.4043	0.3005
	28-37	25 (35%)	46 (64%)		
	>37	27 (49%)	26 (51%)		
Hours of sitting	<3	26 (39%)	40 (61%)	0.2321	0.63
	>=3	63 (42%)	87 (58%)		
No. of times bending & lifting heavy weight	At least once every day per week	69 (50%)	68 (50%)	10.78	**0.004***
	Not every day per week	26 (30%)	60 (70%)		
	Did not do	6 (27%)	16 (73%)		

Table 4.4.5: Occupational health problems and the ways of processing e-waste as reported by workers as well as confirmed by healthcare providers

Ways of processing e-waste	Occupational health problems
Dismantling	Injuries - hands, feet, eye
	Musculoskeletal trouble – neck trouble, low back trouble
Stripping of wires/cables	Finger injuries
	Skin allergy/itching
	Watery and itchy eyes
Bending and Lifting heavy weight	Musculoskeletal trouble – shoulder trouble, low back trouble
Use of chemicals to extract metals	Blisters in hands
	Breathing difficulties

4.5: HEALTHCARE SEEKING PRACTICES OF ADULT MALE WORKERS CURRENTLY ENGAGED IN E-WASTE PROCESSING

The workers encountered various health problems at their workplace with injuries, Musculo-skeletal and skin problems being the commonest ones. Workers labeled certain types of problems as “normal” for which consulting a healthcare provider deemed unnecessary. They approached a healthcare provider only when they felt the particular problem to be “serious”.

Taking into consideration their employment and working conditions along with health problems which would have bearing on their healthcare seeking practices, I divide this section into two. One subsection describes the location of various healthcare facilities in and around e-waste processing units and the other the healthcare seeking practices of workers using the findings from the cross-sectional survey, in-depth interviews, and from non-participant observation. The google map was utilized to get the location (latitude and longitude) of various healthcare facilities.

4.5.1 Location of various healthcare facilities in and around e-waste processing units

I could map the healthcare facilities – clinics, hospitals, & medical stores – based on the interviews as well as the observation. The healthcare facilities were divided into two headings – clinics & hospitals, and medical stores. These are described below:

Clinics and hospitals

There were four government healthcare facilities - one tertiary-care center, two primary health centers, and one ESI (Employees' State Insurance) dispensary; nineteen private clinics (few were nursing homes) and two charitable clinics in and around the e-waste processing units.

The following figure shows the distribution of the government, private as well as charitable healthcare facilities.

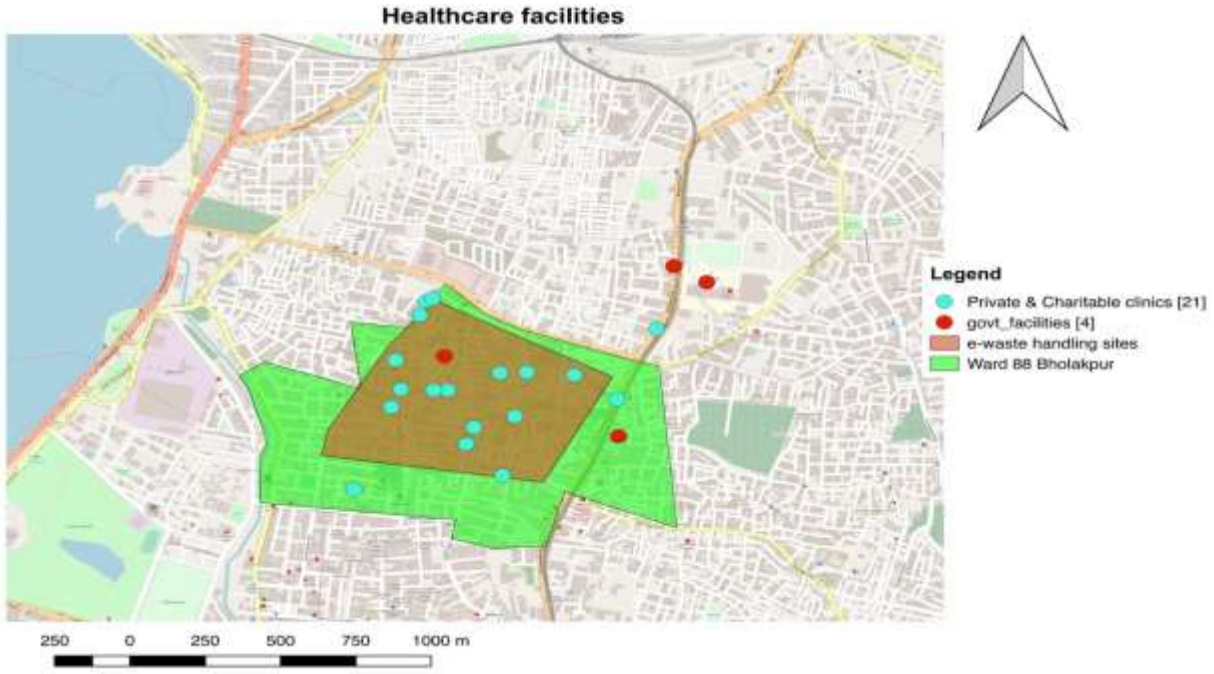

Figure 4.5.1: Clinics and hospitals in and around e-waste processing sites

Medical stores

There well twenty-nine medical stores in and around the e-waste processing units. The following figure shows the distribution of medical stores:

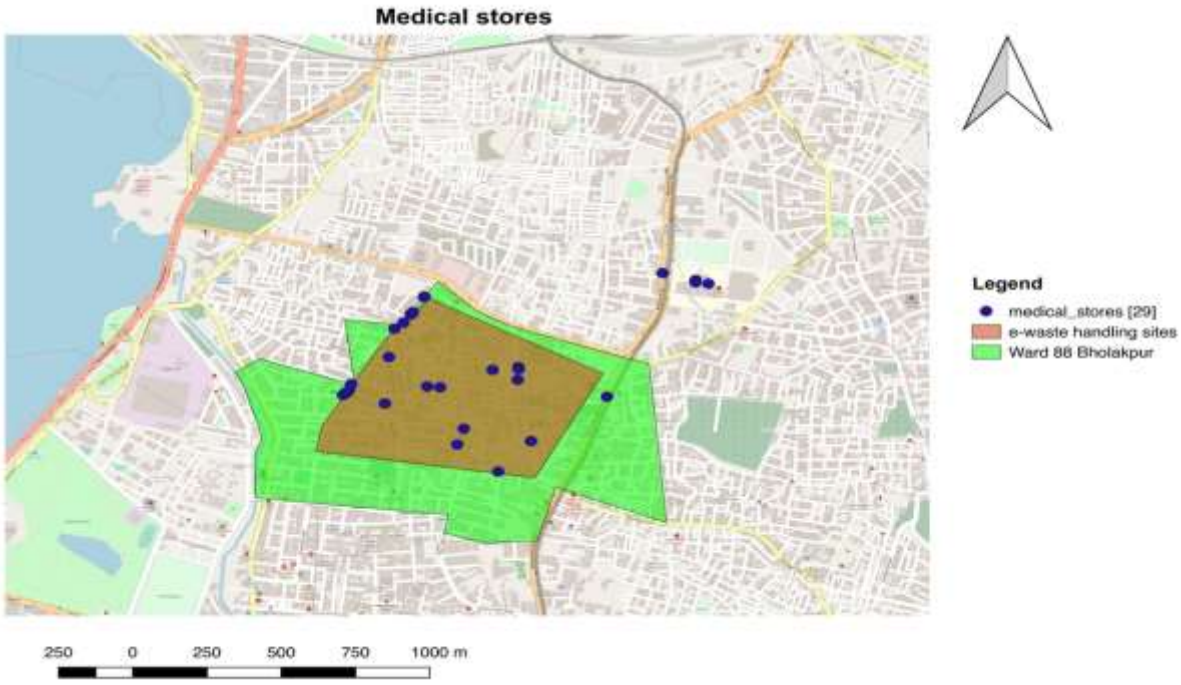

Figure 4.5.2: Medical stores in and around e-waste processing sites

4.5.2 Healthcare seeking practices for general health problems reported by adult male workers currently engaged in e-waste processing

The workers reported seeking healthcare in the nearby private as well as in charitable clinics for their health problems which ranged from mild fever to chronic conditions such as hypertension. Though the government-run tertiary healthcare center was occasionally utilized for extreme health problems such as severe injuries, no services were availed from any of the two UPHCs. On a few occasions, they sought services in the health camps.

"*These workers will go to the hospital only in case of some major health issue. Only a few people go to the primary health center, mostly they go to private clinics. If it is something serious, then the one with money will go to a corporate hospital and those who don't have money will go to Gandhi hospital."* – [IDI18 - social worker]

The following reasons emerged for workers preference for seeking healthcare in private and charitable clinics:

Good treatment by the doctors – There was a consensus among the workers that doctors at private & charitable clinics treat well. On one side there was a doctor who was treating poor patients for free, on the other side there was another doctor who

was charging exorbitant fee still many of them would consult him because of the immediate relief provided by his 'powerful' medicines. The exorbitant fee which amounted to 350 INR only for consultation, ensured minimum waiting time.

"*I feel he is good. I get relief from his medicines within one to two days, he gives powerful medicines. We cannot afford to take rest. We have to remain active, and his medicines work quickly."* – [IDI7 – worker aged 20]

"My husband does not like waiting and so he goes to him in case of any health problem. He has two different types of fees: General and special. If you are paying the general fee (200 rupees) you have to wait but if you are paying the special fee (350 rupees) you would be asked to wait only for 10 minutes and then the doctor will call you inside." – [spouse of a male worker]

I had visited this particular doctor's, a homeopathy practitioner hospital for a couple of times and it always appeared crowded to me. It had one waiting area (outermost); one another room (middle room) where the provider was seeing and dispensing medicines to patients, and a small physical examination room (innermost room). I observed the presence of a huge number of saline bottles in the middle room. He was also prescribing allopathic medicines to the patients. A paper on the wall of the waiting room, which said – General fee – 200 INR, special fee – 350 INR, could also be observed.

Trust between the workers and private healthcare providers - 'Trust' emerged as another important factor for seeking care in private clinics. A few of the private healthcare providers had become the 'family doctor' of the workers as they were practicing in these slums for more than a decade which had nurtured a strong bond between the workers and the providers. One of the providers (an MBBS practitioner) from the charitable clinic, who was relatively new to the area, informed that though he was trying his best to gain the trust of people, people would prefer visiting the homeopathy doctor (mentioned above).

"People over here trust him (the homeopathy provider) a lot and that's why you will find his clinic always crowded. His daughter is an MBBS doctor, but nobody consults her. People will go to hospital only when he is there." – [IDI4 – worker aged 50]

"He (that homeopathic doctor) is here for 30 years; people consider him a god. He has gained the trust of the people. I am a senior practitioner and I too interact with the patients in a way so that I can gain their trust" – [IDI20 – a healthcare provider]

Nearby location of the clinics –. It was observed that the clinics were located nearby, in some cases just adjacent to the e-waste processing units. The nearby location of the clinics made healthcare seeking convenient for the workers as it saved their time.

Convenient timings of the clinics – The private and charitable clinics were functional through the day - in the morning, evening, and late-night also, few of them were functional even on Sundays. This helped them in seeking care based on their convenience. However, it was underscored by the healthcare providers that workers would visit clinics mostly after finishing the routine work.

"I go to a private practitioner; his timings are convenient to me. His clinic remains open till midnight (timings:8 pm to 12 pm). So, I can go there after finishing my work." – [IDI6 – worker aged 29]

The above findings revealed workers' reasons for preferring private and charitable clinics over the UPHCs. They did not seek care in any of the UPHCs because of the following reasons:

UPHCs were addressing the healthcare needs of women and children - I continuously observed one of the UPHCs, which was closer to e-waste processing units than the other one, throughout my data collection period, and noted the presence of women and children. No young adult male could be observed there. There was a consensus among workers that UPHCs were not made for men as these were addressing the healthcare needs of women and children. They justified this on the basis of their observation, they had always observed women and children visiting there. The healthcare providers also confirmed that the workers had developed this belief because of their observation.

"See, only females are there. How could we go there? You should ask the doctor of this UPHC to put a board outside in which it is written that this UPHC is for males also." - [IDI9 – worker aged 26]

Inconvenient functional timings & waiting time – The inconvenient functional timings of UPHCs as well as long waiting time refrained workers from seeking care there.

"Workers do not go to UPHCs because of inconvenient timings, UPHCs remain open only during daytime and these workers cannot leave their work and go in the daytime." – [IDI21 – a healthcare provider]

Non-availability of medicines & inappropriate behavior by healthcare providers – The non-availability of medicines along with the inappropriate behavior by the healthcare providers further abstained them from utilizing healthcare services from UPHCs.

"I don't go there as doctors are not available on time. If by chance they are available, they won't see us properly, they write something on paper & ask us to get medicines from outside. For everything they refer us to the Gandhi hospital."- [IDI12 – worker aged 26]

Other than the above-mentioned reasons distance appeared another factor which prevented the workers from seeking care in UPHCs whereas a few of them had never heard of the existence of one among the two UPHCs.

Along with the private and charitable clinics as well as UPHCs, health camps emerged as another source of healthcare-seeking though a negligible number of workers sought care there.

The survey findings showed that a majority of workers (89.8%) had heard of health camps, out of which 98% (215 out of 220) reported that health camps keep happening in the area. 15% of them reported attending health camps which were conducted in the past six months with fever being the commonest reason cited (16 out of 32) (Table 9). The health camps were conducted by various groups including welfare societies, local politicians, doctors from private hospitals, and UPHCs.

I happened to observe one of the health camps (an outreach camp) conducted by one of the two UPHCs. The health camp predominantly had females and children as patients; few elderly males could also be observed but their numbers were negligible as compared to females. The healthcare staff consisted of one female doctor, four other female staff and one male staff. It was conducted between 9 AM to 1 PM. The absence of adult males in the health camps could be explained by the following - inconvenient timings, long waiting time, overcrowding as these were free. Also, they believed that health camps were for the elderly as these were mostly to check for blood pressure and sugar levels. Further, the presence of inexperienced doctors

providing inadequate treatment emerged as another factor for not seeking care in health camps. There were instances of health camps being conducted by private hospitals where doctors would do some initial check-up and then would ask people to visit their hospitals for further checkup.

"I don't go. If I go, I have to stand in a long queue, it takes a lot of time, I cannot afford to waste my time there." – [IDI6 – worker aged 29]

"Why should I go when nothing happens to me, camps are only for elderly people who are having sugar and BP issues." - [IDI8 – worker aged 23]

The focus of heath camps predominantly on women & children, and no camps for addressing occupational health problems were another reason spelled out for the absence of workers from health camps.

"General health checkups are carried out in the health camps. They mostly check for fever, cold, cough. No health camp is conducted for these people. These people don't attend camps because they say that neither they have a cold nor cough nor fever and why should they go there." – [IDI18 - social worker]

Another important source for seeking healthcare was medical stores. They reported practicing self-medication for certain conditions such as cold, headache, body ache, injuries, low back pain etc. At least one medical store could be observed in each lane. While many of them were attached to a clinic, a few were standalone stores.

4.5.3 Healthcare seeking practices for occupational health problems reported by adult male workers currently engaged in e-waste processing

Though workers were predominantly dependent on the private as well as charitable clinics for their healthcare-seeking in general, their healthcare seeking behavior emerged to be dependent on the types of health problems encountered by them which are described below using the cross-sectional survey, non-participant observation, and in-depth interviews.

Healthcare seeking practices for injury

The survey findings showed that a little more than a half (53.6%) of the workers, who encountered injury in the past two weeks preceding the study, reported consulting a healthcare provider for the same whereas 94% of the workers, who encountered injury in the past two years preceding the study, reported consulting a

healthcare provider for the same. Bandage and medicines were the commonest treatment prescribed by the providers in both the cases (77% & 53% respectively). In the second case, 24.2% (23 out of 95 injured) of the workers also had to get their wound sutured. Interestingly, 7% (7 out of 100) of the injured workers who had encountered deep cut which required suturing refused it on the ground that suture creates a scar on the skin which does not look good (Table 4.5.1).

The survey findings showed that a majority (91%) of those, who reported encountering injury at any point of time, consulted a private healthcare provider in the vicinity, none of them reported visiting any of the two UPHCs. The commonest reason (34.5%) reported for seeking care for injury in the private clinics was the good treatment provided by the healthcare providers (Table 4.5.1).

Apart from the healthcare-seeking described above, one practice that was almost universal for those requiring medical care was the use of TT injections (forthcoming paper in the Journal of Indian Anthropological Society). A majority (67.7%) of them reported that they had a TT injection in the past six months out of which 57.8% of them reported getting it once, 32.5% reported getting it twice, 5.5% reported getting it thrice, 0.6% reported getting it four times whereas 3.6% reported getting it six times in the last six months. A majority (66.5%) of them reported visiting private clinics for the injection. The median amount charged by the healthcare providers for TT injection was 70 INR with the range lying between 30 & 200 INR. The commonest (87.3%) reason cited by the workers for taking frequent TT injection was that it prevents spread of infection (Table 4.5.1).

The workers' healthcare seeking for injury appeared to be dependent on their perception of its severity. They categorized their injuries as either 'normal' or 'severe', I have used that categorization in the subsequent discussion.

Measures taken for minor injuries – The workers were getting injured routinely and the major reason cited for this was the nature of their work. It was so common that they would care about these injuries only when these were severe otherwise, they would either leave the injured part as it is hoping that it would heal by itself or washed it with water, tie a bandage & would resume their work. Along with these, they also resorted to self-medication practices.

"See, I keep getting frequent cuts while stripping wires, I don't do anything for these. My palm will be fine in two days." – [IDI7 – worker aged 20]

"I keep getting injured while stripping the wires, I get some ointment from the medical store and apply over the injured part." – [IDI15 – migrant worker aged 19]

Measures taken for major injuries – The workers consulted either a private or a charitable healthcare provider following any serious injury, they never approached any of the two UPHCs.

"Six months back, I had a major cut in my finger while breaking a motor, I had to go to one of the private doctors to get it stitched." – [IDI5 - worker aged 26]

Gandhi hospital, a tertiary care state government's hospital, was preferred mostly for severe injuries, but not everybody had utilized it even for severe injuries. They would seek care there only when the nearby private and charitable clinics were closed. The factors which emerged as deterrents for seeking care for injuries included – long waiting time; filing police complain in case of injury and paying money to police as well as inappropriate attitude of doctors.

"If we go to Gandhi hospital for big injuries first thing, we are asked to do is to make a police complaint. They don't bother how severe the injury is and hence we don't go there. Once one of my worker's hands got cut while working, it was bleeding incessantly. We took him to Gandhi hospital where they asked us to report this to police." - [IDI9 – worker aged 26]

Interestingly, one practice that stood out among the healthcare-seeking practices for injuries was the frequent use of TT injection. Despite the availability of the TT vaccine free of cost at UPHCs, workers' first point of contact for getting it was either a charitable or a private clinic (reasons for their preferences are mentioned in the earlier sections). The doctors from these private and charitable clinics recognized that such frequent TT injections were not warranted. However, they continued to prescribe the injections for several reasons. One of the common refrains was that if they do not give the injection someone else would or that the workers insist on having the injection – with the providers merely complying. In other instances, the practitioners blamed the lack of records, quality of the injections available, workers' belief system as well as their memory to justify the provision of TT injection.

"Ideally TT vaccine should be taken every 6 months continuously for 6 years. I ask workers when they took the last TT shot, if it is less than 6 months, I usually do not recommend them getting vaccinated again. But I am forced to give it as workers keep insisting." – [IDI21- a healthcare provider]

"I ask workers to take TT vaccine in every 2-3months; I am doubtful about the cold chain mechanism followed to preserve the vaccine. These workers don't remember their vaccination history so if I don't give it, they may end up having a severe infection." – [IDI20 - a healthcare provider]

This frequent practice also had its roots in the workers' belief system. There was a consensus among workers that not taking TT injection would result in the spread of infection throughout their body which would lead to "*rotting of their hands and feet*". On probing, however, none of them were able to recall specific instances of having ever seen anybody with rotten hands and feet due to not taking TT injection. It seemed however a very commonly shared belief. They had learned from their elders that TT injection would keep them "*healthy"*, and hence it should be taken irrespective of the injury. For this, they would insist doctors even if the doctors deny as they strongly believed that the nature of their work and pollution in the area, necessitate them to take TT injection frequently irrespective of the injury.

"See his left arm, it has scratches (resulted while stripping wires) through which dust has gone inside the body and the nearby has turned black. This is because he did not take the TT injection." – [IDI5 - worker aged 26]

"Even if the doctor asks me to take TT injection every 6 months, I insist and take it every 2-3 months because I know better about my work than the doctor." – [IDI9 – worker aged 26]

Healthcare seeking practices for musculoskeletal problem(s)

The survey findings showed that out of 15 workers, who reported having neck trouble in the past month, a majority of them (66.6% i.e., 10 out of 15) informed consulting a private healthcare provider whereas out of 12 workers, who reported having shoulder trouble in the past month, reported consulting the healthcare providers - 3 of them consulted private healthcare provider and 1 went to the government-run tertiary care hospital. Almost one-third of the workers (34 out of 101) with low back trouble reported consulting any healthcare provider out of which

again a majority of them (82.3% i.e., 28 out of 34) went to private healthcare providers (Table 4.5.1).

The workers consulted a healthcare provider only when they could not bear the pain (particularly low back) whereas they managed less painful condition somehow either by leaving it as it or by getting medicines from the nearby medical stores.

"I had to see a doctor from a private clinic when one day suddenly my low back pain intensified, previously I used to have dull pain, so I did not bother. He gave me medicines and asked me to take rest. He also asked me not to lift the heavy thing. But this is my work, so I have to do, but now I am doing it with little care." – [IDI6 – worker aged 29]

Interestingly, one practice that stood out among the healthcare-seeking practices for Musculo-skeletal problems was 'Hijama'. It emerged as one of the cultural practices particularly for low back pain and shoulder pain. There was a consensus among the workers that the pain was caused by 'waste blood or black blood'. They could get rid of this pain only when the waste blood is removed through the process of hijama in which many superficial cuts would be made at the pain site following which a plastic cup would be placed over it to suck the waste blood. It was a part of their religious practice as it is mentioned in the religious text, Quran.

"I consulted many doctors, but I was not getting any relief. Doctors asked me not to lift the weight. I cannot stop lifting weight as it is an important part of my work. Finally, I have started going for hijama and my pain has reduced a bit especially the radiating pain. I go every month for this." – [IDI9 – worker aged 29]

The workers had to travel to other parts of the city to get it done as this was not conducted frequently in the area, occasionally, a welfare society in the area would conduct camp for this. Few trained persons (neither an MBBS nor an AYUSH practitioner) were practicing this. The workers were charged based on the number of cups required, which in general ranged between 100 and 150 INR per visit.

Healthcare seeking practices for skin problem(s)

The survey findings showed that 44% (14 out of 32) of workers reported consulting a healthcare provider for their skin problem/s out of which a majority (10 out of 14) consulted private healthcare providers (Table 4.5.1). They considered skin problems (itching/rashes) as 'normal' because of the type of work they were engaged with.

They resorted to washing hands when they had itching (due to their work) or taking bath after finishing their routine work every day. The application of coconut oil after washing hands with soap and water, especially after stripping telephone cables, provided relief from itching. The healthcare providers were consulted only when the problem caused a particular threshold.

"Initially, I went to Gandhi hospital, I took treatment for one month. I got little relief and hence I stopped taking medicines. I could not continue it further because the doctor was prescribing very expensive medicines. My itching started again. This time I consulted a doctor from a private clinic, took medicines prescribed by him for 2-3 days, and then discontinued as I was not getting relief. I consulted another doctor from another private clinic and took medicines for 5-6 days and then discontinued, here also I did not get any relief. So, now I have left it as it is." - [IDI8 – worker aged 23]

Healthcare seeking practices for other problems

The survey findings showed that out of 5 workers who reported one or more breathing difficulties, 2 reported consulting doctors from private clinics, 2 reported eating jaggery whereas one did not do anything. Eating jaggery was used as a way to deal with breathing difficulties.

"I have breathing difficulty whenever I work with chemicals, and to get the relief I eat jaggery." – [IDI17 – worker aged 60]

The survey findings showed that out of 16 workers who reported one or more eye problem/s, 5 reported consulting doctors from private clinics whereas 1 of them sought care from the government-run tertiary care hospital. Out of 17 workers who reported one or more any gastro-intestinal problem, 8 reported consulting doctors from private clinics whereas remaining ones got medicines from the medical stores.

Table 4.5.1 describes healthcare seeking practices of adult male workers currently engaged in e-waste processing – healthcare seeking in health camps; healthcare seeking for injuries, musculoskeletal problems, and skin problems.

Table 4.5.1: Healthcare seeking practices of adult male workers currently engaged in e-waste processing

	Proportion of respondents
Healthcare seeking in health camps	
Heard of health camps (n=245)	220 (89.8%)
Whether health camps are conducted in your area (n=220)	
Yes	215 (98%)
No idea	5 (2%)
Attended health camp in the past six months (n=215)	32 (15%)
When did you attend your last health camp (n=32)	
within last three months	14 (43.75%)
Three months before	10 (31.25%)
Do not remember	8 (25%)
Reasons for attending health camp (n=32)	
Cold & Fever	16 (50%)
Body pain	5 (15.6%)
Others (eye-test, skin problem) Eye test	5 (15.6%)
Do not remember	6 (18.8%)
Reasons for not attending health camp	
Why to go when nothing happens (n=184)	72 (39%)
No time to go (n=184)	59 (32%)
Overcrowding as it is free (n=184)	16 (9%)
Go directly to private clinic (n=184)	13 (7%)
Doctors do no treat properly (n=184)	8 (4%)
Do not know when it happens (n=184)	7 (4%)
Do not like going there	7 (4%)
Health camps are for elderly (n=184)	6 (3%)
Others (n=184)	19 (10%)
Healthcare seeking for injuries	
For injuries encountered within the past two weeks (n=41)	
Consulted a doctor	22 (53.6%)
Other measures	19 (46.4%)
For injuries encountered in the past two years (n=101)	
Consulted a doctor	95 (94%)
Other measures	6 (6%)
Treatment received on consulting the doctor (n=95)	
Bandage & medicines	53 (55.8%)

Suturing of wound	23 (24.2%)
Others	19 (20%)
Clinic/hospital visited in the vicinity for seeking care for injury	
Private clinic (n=99)	90 (91%)
Charitable clinic (n=99)	17 (17.2%)
Government-run tertiary care hospital (n=99)	14 (14%)
Government-run UPHCs (n=99)	0 (0%)
Others (n=99)	8 (8%)
Reasons for seeking care for injuries in private clinics[1]	
Good treatment (n=84)	29 (34.5%)
Nearby location (n=84)	20 (23.8%)
Family doctor (n=84)	11 (13%)
Convenient timings (n=84)	8 (9.5%)
Powerful medicine given by the doctor	8 (9.5%)
Others (n=84)	15 (17.8%)
TT injection	
Received TT injection in the past six months (n=245)[2]	166 (67.7%)
Number of times TT injection received in the past six months (n=166)	
Only once	96 (57.8%)
Twice	54 (32.5%)
Thrice	9 (5.5%)
Four times	1 (0.6%)
Six times	6 (3.6%)
Healthcare facilities approached for TT injection (n=164)[3]	
Private clinic	109 (66.5%)
Charitable clinic	51 (31%)
Private & charitable clinic	4 (2.5%)
Workers' explanation for frequent TT injection	
It prevents spread of infection (n=166)	145 (87.3%)
Doctor asks to take it frequently (n=166)	86 (51.8%)
It helps in wound healing (n=166)	16 (9.6%)
Elderly says that it keeps us healthy (n=166)	11 (6.6%)
Because of the nature of our work (n=166)	6 (3.6%)
It relieves pain (n=166)	4 (2.4%)
Others (n=166)	8 (4.8%)

Musculoskeletal problems	
Neck trouble	
Approached any healthcare provider for neck trouble (n=15)	10 (66.6%)
Type of healthcare facility approached (n=10)	
Private clinic	10 (100%)
Shoulder trouble	
Approached any healthcare provider for shoulder trouble (n=12)	4 (33.3%)
Types of facility approached (n=4)	
Private clinic	3 (75%)
Government-run tertiary care hospital	1 (25%)
Low back trouble	
Approached any healthcare provider for low back trouble (n=101)	34 (33.6%)
Types of facility approached (n=34)	
Private clinic	28 (82.3%)
Charitable clinic	2 (5.9%)
Government-run tertiary care hospital	3 (8.8%)
Both private clinic and government-run tertiary care hospital	1 (3%)
Skin problem/s	
Approached any healthcare provider for skin problem/s (n=32)	14 (43.7%)
Types of facility approached (n=14)	
Private clinic	10 (71.4%)
Charitable clinic	4 (28.6%)

[1]There were six missing values for 'Reasons for seeking care in private clinics'
[2]There were two missing values for 'Received TT injection in the past six months'
[3]There were two missing values for 'Healthcare facilities approached for TT injection'

Table 4.5.2: Various practices reported by adult male workers currently engaged in e-waste processing for their occupational health problems

Occupational health problems	**Practices**
Minor injuries	Leaving it as it is
	Washing with water
	Washing with water and applying antiseptics such as Dettol or iodine
	Apply turmeric
	Use of generator oil
	Get ointment from the nearby medical store
	Getting TT injection
Major injuries	Consulting a healthcare provider
Musculo-skeletal problems	Leave it as it is
	Consulting a healthcare provider
	Hijama
Breathing difficulty	Eating jaggery
	Consulting healthcare provider
Skin problems	Taking bath
	Applying coconut oil
	Consulting healthcare provider

4.6: CURRENTLY WORKING ADOLESCENT MALE WORKERS AND WOMEN

4.6.1 ADOLESCENT MALE WORKERS

Adolescents could not be formally included in the research because they were not eligible to give informed consent as per the ethical guidelines which I had to follow. Further, neither their parents nor any legal guardian could be found in most cases in the study setting who could give an informed assent on behalf of them. However, I did have informal conversations with a few of them who volunteered out of interest. A 12-year-old worker trying to break a small item, mentioned about regular school during week days and working processing e-waste on holidays. Another 15-year-old worker mentioned dropping out of school long back to pursue full time work because of the poor financial condition of his family. Another young worker told that he left school and started working with e-waste because most of his friends were also working there. I did observe many adolescents processing e-waste (predominantly stripping wires manually), from morning (10 AM) till afternoon (3 PM), on almost all days of data collection, which suggests that they had permanently or temporarily discontinued schooling.

I observed 11 workers in one of the units all of whom were migrants and 7n out of them were adolescents between 14 and 18 years of age. They were predominantly from other Indian states like Bihar and Uttar Pradesh. They reported moving to Hyderabad in search of employment and expected to find work with the help of their acquaintances from the village who were working in the region. They were observed getting injured. On one occasion, an adolescent was observed encountering frequent pricks while he was stripping wire manually. From his expression, I could figure out that those pricks must be painful.

4.6.2 WOMEN

Workers in this sector were predominantly men. The survey, which was conducted in e-waste processing units, had only a single woman respondent. I observed just three women workers throughout the research, two were working in the unit and the one working at her house. The two women who were working in units were getting fewer

wages as compared to the male workers, and ‘gender’ emerged as the reason for them receiving the lesser wages.

The major cited justification for the absence of women in e-waste processing work was the amount of ‘hard work’ required to process it. The cultural barriers also limited their entry into units and hence they preferred working inside their home.

"In our culture, it is not considered good for women to go out and work, so I do this work in my home only." – [IDI1 - woman worker aged 44]

In addition to their own poor health status, women workers also reported poor health conditions of their spouses which compelled them to take up this work

4.7: POLICIES ADDRESSING OCCUPATIONAL SAFETY AND HEALTH OF WORKERS IN THE UNORGANIZED SECTOR

The framework proposed by Muntaner et al (as detailed in chapter 2) explains the link between power relations at macro-level and the subsequent formulation of labour and welfare policies. These policies have bearing on employment and working conditions as well as on the healthcare system. These in turn affects workers’ health and healthcare seeking practices (Muntaner et al., 2010). This chapter describes how the problem of occupational safety and health has been conceptualized in the key policy documents in India during the post-independence era (described below). The conceptualization of occupational safety and health by the policies could affect workers’ health and healthcare seeking practices by shaping their employment and working conditions as well as availability and accessibility oof a healthcare system that is sensitive to their needs.

I have started this chapter by listing the documents which deal with occupational safety and health of workers in general and thus would guide policy for the unorganized sector. I chose to take forward these selected documents for further analysis. This is followed by a brief description of selected policy documents and the domains identified from the documents and their subsequent analysis using the WPR approach.

4.7.1 Documents dealing with occupational safety and health of workers in the unorganized sector

I started with the following key policy documents – National Policy on Safety, Health, and Environment at Workplace (NPSHEW), 2009; National Health Policy, 2017; Telangana e-waste Management Policy, 2017 – these were the primary documents dealing with occupational health of all the workers including workers in the unorganized sector. I also chose a few other documents – The Unorganized Sector Workers' Bill, 2004; Unorganised Non-Agricultural Workers' Conditions of Work and Social Security Bill, 2007; The Unorganised workers social security act, 2008; National Urban Health Mission, 2013 and E-waste rules, 2016. These additional documents were selected to get a larger picture of the overall discourse in which the key policy documents are embedded. While there were examples of other unorganised sector workers such as Beedi workers, construction workers, etc., who had specific acts in place, these acts were the outcome of specific processes of organisations that were not present among the workers who I was studying and hence I did not concentrate on these.

4.7.2 A brief note on occupational health in the selected key policy documents

The National Policy on Safety, Health and Environment at workplace, 2009 - In February 2009, the Ministry of Labour and Employment, Government of India, approved the National Policy on Safety, Health and Environment at workplace (NPSHEW) which was formulated by national authorities in consultation with social partners. The policy recognises safe and healthy working environment as a fundamental human right with the government regulating all economic activities for management of safety and health risks at workplaces and providing measures to ensure safe and healthy working conditions for all workers. Along with ensuring safe and health working conditions; eliminating health problems of workers and preventing loss of national assets, the policy also aims to enhance the well-being of employee and society, at large. It proposed to do so by the provision of statutory framework; administrative and technical support services; incentives to employers and employees; developing research and development capabilities; prevention strategies and their monitoring; promoting inclusion of safety, health and environment, improvement at workplaces as an important component in other

relevant policy documents. The policy would be implemented with an action programme targeting eight specific areas of action including enforcement; development of national standards; ensuring compliance; increasing awareness; promoting research and development; occupational safety and health skills development; data collection (Ministry of Labour and Employment, 2009).

The National Health Policy (NHP), 2017 - This envisages to assure availability of comprehensive primary healthcare services for all prevalent health conditions including occupational diseases. It intends to ensure safe health practices and accident prevention by encouraging and monitoring worksites and institutions. It also recommends private sector, through CSR, to play an active role in awareness generation on occupational health (Ministry of Health and Family Welfare, 2017).

Telangana E-waste Management Policy, 2017 - It was formulated in 2017 with the vision of curtailing growth of the unorganised sector, and to provide formal, safer and better opportunities to the unorganized sector employees through creating awareness among the workers about the adverse effect on their health due to unsafe practices and to rightly train them ensuring their smoother transition to organised sector (Government of Telangana, 2017).

The interventions/actions proposed in the key policy documents were categorized under four main domains. These domains emerged on reading and re-reading the key policy documents through the lens of What's the Problem Represented to be? (WPR) approach. In the following sub-sections I present examples of statements that one representative of each category derived from the main policy documents listed above.

Strengthening of implementation machinery

The following are the examples of statements that fall under this domain:

- "by effectively ensuring all applicable laws and regulations concerning safety, health and environment at workplaces in all economic activities through an adequate and effective labor inspection system……." (Ministry of Labour and Employment, 2009)
- "by establishing suitable schemes for subsidy and provision of loans to enable effective implementation of policy……." (Ministry of Labour and Employment, 2009)

- "by providing adequate penal provisions as deterrent for violation of laws for the time being in force….." (Ministry of Labour and Employment, 2009)
- "by amending expeditiously existing laws relating to safety, health and environment and bring them in line with the relevant international instruments…." (Ministry of Labour and Employment, 2009)
- "by encouraging the appropriate government to assume the fullest responsibility for the administration and enforcement of occupational safety, health and environment at workplace, provide assistance in identifying their needs and responsibilities in the area of safety, health and environment at workplace, to develop plans and programs in accordance with the provisions of applicable acts and to conduct experimental and demonstrating projects in connection therewith….." (Ministry of Labour and Employment, 2009)
- "Worksites and institutions would be encouraged and monitored to endure safe health practices and accident prevention, besides providing preventive and promotive healthcare services……." (Ministry of Health and Family Welfare, 2017)

Characteristics of the work situation

The following are the examples of statements that fall under this domain:

- "by ensuring that employers, employees and others have separate but complementary responsibilities and rights with respect to achieving safe and health working conditions……" (Ministry of Labour and Employment, 2009)
- "by encouraging employers to ensure occupational safety and health management systems, establish them in efficient manner to improve workplace safety and health….." (Ministry of Labour and Employment, 2009)
- "by ensuring a suitable accreditation machinery to recognize institutions, professionals and services relating to safety, health and environment at workplace for uniformity and greater coverage as also authenticating safe management system….." (Ministry of Labour and Employment, 2009)

Training

The following are the examples of statements that fall under this domain:

- "the government shall introduce vocational training programs to rightly skill the current unorganized sector employees to ensure their smoother transition to working with organized sector recycling and refurbishing units that shall benefit from this policy……" (Government of Telangana, 2017)
- "by adopting occupational safety and health training curricula in workplace and industry programs….." (Ministry of Labour and Employment, 2009)

Awareness creation

The following are the examples of statements that fall under this domain:

- "by increasing awareness on safety, health and environment at workplace through appropriate means……." (Ministry of Labour and Employment, 2009)
- "by providing practical guidance and encouraging employers and employees in their efforts to reduce the incidence of occupational safety and health risks at their places of employment and to impress upon employers and employees to institute new programs and to improve existing programs for providing safe and healthful working conditions, requiring employers to ensure that workers and their representatives are consulted, trained, informed and involved in all measures related to their safety and health at work……." (Ministry of Labour and Employment, 2009)
- "the government through collaboration with NGOs, non-profits and industry associations shall initiate an awareness drive to educate every employee in the unorganized sector about the adverse effects on their health due to unsafe practices……." (Government of Telangana, 2017)
- "the private sector could use the CSR platform to play an active role in the awareness generation through campaigns on occupational health……" (Ministry of Health and Family Welfare, 2017).

4.7.3 WPR approach to policy analysis

This approach to policy analysis, introduced by Carol Bacchi, challenges the conventional notion of policies as problem solving instruments. It offers a way to question critically how policies produce problems as particular type of 'problems' which Bacchi calls as problematizations (Bacchi, 2014). I take this approach to

explore the problematizations of occupational safety and health in the key policy documents. To understand these problematizations Bacchi asks us to answer the six questions (explained in detail in chapter 2) however I chose to focus on the first four questions which are as follows: what is the 'problem of occupational safety and health' represented to be in the key policy documents or one can also say how the 'problem of occupational safety and health' has been produced/constructed by the key policy documents; What presuppositions and assumptions underlie this representation of 'problem'; how has these 'particular problems' emerged as dominant ones; what is left unproblematic (silences) (Bacchi, 2014).

The repeated reading of the interventions/actions suggested in the key policy documents, through the lens of WPR, in connection with what I observed/found on the ground gave the impression that these policies (NPSHEW, NHP) were blind to the contexts and specificities of workers processing e-waste in Bholakpur, thus 'excluding' them. Hence, it is pertinent to question the inclusivity of these policies. Secondly, the existing evidence suggests that that employment and working conditions are determined by the macro-level factors and workers, predominantly self-employed ones, have no control over these. However, the policies appeared to put the onus of occupational safety and health on the workers and, hence, individualized the responsibility regarding the occupational safety and health. For instance, though Telangana e-waste management policy categorically focus on workers in unorganized e-waste processing sector, the interventions in the form of creating awareness and provision of training hints at the individualization of responsibility. I describe both these – inclusivity of the policies and individualization of responsibility – below by utilizing the questions suggested under WPR approach.

4.7.3.1 Inclusivity of the policies

I have attempted to explore the inclusivity by asking the following two questions:

what is the 'problem of occupational safety and health' represented to be in the key policy documents or one can also say how the 'problem of occupational safety and health' has been produced/constructed by the key policy documents? What presuppositions and assumptions underlie this representation of 'problem'?

What is the 'problem of occupational safety and health' represented to be in the key policy documents? What presuppositions and assumptions underlie this representation of 'problem'?

The policy documents (NPSHEW and NHP) appear to produce/conceptualize the problem of occupational safety and health as a *problem of inadequate implementation of the existing laws and regulations* regarding occupational safety and health in all economic activities.'

The problematization of occupational safety and health as 'inadequate implementation' could have emerged from the deep-seated assumptions of the existence of an *'inclusive system'* which caters to occupational safety and health of all workers in all economic activities. The policies assume that the existing laws/regulations are sufficient to address the occupational safety and health of all workers. This could have been shaped by the assumption that the unorganized sector is temporary and with due course of economic growth and development it would be subsumed by the organized sector (this is described in detail in section 2.4 in the Literature Review chapter). Hence, once the unorganized sector is subsumed by the organized sector the occupational safety and health of workers would automatically be taken care off by the laws which govern the occupational safety and health of workers in the organized sector. However, the reality is very different. The unorganized sector continues to absorb the majority of workforce in India, and this could be understood from the fact that approximately 80.9% of workforce is concentrated in the unorganized sector and the workers are predominantly self-employed (International Labour Organization, 2018a).

Contrary to the assumption of the existence of an 'inclusive system', the interventions/actions suggested in the policies give an impression of a 'system' which largely restricts itself to certain categories of economic activities carried out by workers under the label of 'schedule employment'. The concept of schedule employment is based on the notion of 'employment relationship' which forms the legal link between employers and employees. It exists when a person performs work or services under certain condition in return for remuneration. It is through this link that reciprocal rights and obligations are created between the employee and the employer. All the existing labor laws operates through this legal link. It is the

responsibility of the center or the state to list the particular economic activity as a schedule employment which would subsequently legalize the employment relationship. The policies on occupational safety and health are also based on employment relationship. The NPSHEW was framed by the Directorate General Factory Advice Service and Labour Institute (DGFASLI). The NHP was formulated by the Ministry of Health and Family Welfare, and it appeared to recognize only those work where an employment relationship could be seen. However, the occupational health falls under the purview of MoLE and DGFASLI which is its technical arm covers only factories and docks. These two ministries, though functioning in silos, appeared to cover either organized sectors (factories and docks) or occupation where an employment relationship could be observed. However, workers processing e-waste in unorganized sector were predominantly self-employed either alone or with the help of their family members. Though a few units had hired workers, the employment relationship was unclear. Hence, they appeared to be excluded by both the ministries.

The domains (described in the previous section) identified from the key policy documents have been employed to further illustrate the assumption of the existence of an 'inclusive system':

Strengthening of implementation machinery – Inadequacy and ineffectiveness of the labor inspection systems have been assumed to be one of the barriers causing inadequate implementation of the existing laws and regulations (Ministry of Labour and Employment, 2009), thereby, making another assumption that labor inspection system operates for all economic activities. However, interview with an official from the State Labour Department revealed that labour inspection system works only for those employment which is recognized as a scheduled employment and e-waste processing in the unorganized sector is not enlisted under scheduled employment. Existence of inadequate penal provision for violating the laws is assumed to be another factor engendering inadequate implementation of the laws (Ministry of Labour and Employment, 2009). While the govt. exempts unorganized sector with less than ten workers from registration (National Commission for Enterprises in the Unorganised Sector, 2007) the same govt. mandates e-waste processing units to

obtain authorization from the pollution control board (Ministry of Environment and Forests, 2011). Here, the govt. appeared to contradict its own mandates. Additionally, e-waste processing is not even recognized as a type of employment and, hence, the concept of penal provision seems to be irrelevant here.

Characteristics of the work situation – The policies assume that there exists employment relationship at all workplaces giving the impression that all the workplaces are legally recognized by the state. The unorganized e-waste processing units were not recognized by the state. This became evident on talking to the official from the state labour department as he was continuously using the word 'ragpickers'. Other than a couple of units which had GST registration, a majority of the units were unregistered and, hence, remained unrecognized.

The assumption of the existence of an employment relationship leads to another assumption that employers and employees in all economic activities can share the responsibility of achieving safe and health working conditions and that the employees have the rights and can exercise these rights to achieve the same. The assumption of the presence of an employer at all the workplaces brings the onus on to the employers to establish efficient occupational safety and health management systems in a way to improve workplace safety and health. A majority of workers in e-waste processing units were self-employed, in case of units with hired workers the employment relationship was unclear. There was no contract either written or oral between employers and employees and, hence, employers had no obligations to ensure occupational safety and health of their workers. However, it would be unjust to ask employers who themselves were surviving on hand to mouth earnings to have an occupational safety and health management system at their workplace. Similarly, the workers with low level of education were forced to work with e-waste as they had no other option. They were trading off their health with livelihood.

Thus, from the above discussion it could be concluded that the key policies continue to work on assumptions of exclusivity of self-employed workers or workers who do not share clear employment relationship with their employers in the unorganized sector.

The issues related to occupational safety and health of workers outside the normative employment relationship did appear in the discourse, in both the ministries – MoLE and MoHFW - since late 60s. I describe these below:

Developments under the aegis of Ministry of Labour and Employment (MoLE)

The First National Commission on Labor (FNCL) submitted its report in 1969 recommending periodic surveys of different categories of unorganized workers to understand their problems; legislative protection by the state for unorganized/unprotected labor; simplification of legislative and administrative procedures applicable to all small establishments; expediting education and organization in the field of unorganized labor; reinforcement and strengthening of inspection system as there is no alternative to the existing implementation machinery; development of self-help group through co-operatives (National Commission for Enterprises in the Unorganised Sector, 2007). However, the first recommendation regarding the formulation of a comprehensive law on safety and health of workers in the unorganized sector in general and women workers in particular was proposed by the National Commission on Self-employed Women and Women Workers (NCSEW) in the informal sector (1988) under the chairmanship of Ela Bhatt. The recommendations/proposal made by FNCL and NCSEW were applicable for all the unorganized sector workers. The National Commission of Rural Labour (NCRL), which was formulated in 1987 to investigate the working conditions of vulnerable section and to implement social legislation for their protection in rural areas, came up with a specific set of recommendations, in 1991, for certain categories of unorganized sector workers including beedi, construction, fisheries, leather, handloom, bonded and migrant laborers, and brick-kilns (National Commission for Enterprises in the Unorganised Sector, 2007). Based on the NCRL recommendations, the Ministry of Labor and Employment (MoLE) proposed a comprehensive legislation for regulation of employment, conditions of service and for the provision of welfare measures for agricultural workers in 1997. In 2002, the Second National Commission on Labor (SNCL) was asked to examine the issue of comprehensive legislation for unorganized sector workers. Subsequently, SNCL proposed an act to consolidate and amend the laws relating to the regulation of employment and workers' welfare in the unorganized sector and to provide for

protection and social security to these workers. This 'umbrella' legislation was intended to cover employment in both agricultural and non-agricultural sectors which were to be listed in the Schedule appended to the proposed act. This proposed legislation was based on the premise of recognizing and protecting all types of unorganized sector workers regardless of industry, occupation, work status, and personal characteristics (National Commission for Enterprises in the Unorganised Sector, 2007). The provision covered included social security, health and safety, working hours, holidays, prohibition of child labor, among other measures. It also proposed the appropriate administrative structure for the implementation of the act - Central level Board, State level Boards, District level Boards, and Workers Facilitation Centers at local level. As a follow-up to this, MoLE proposed a comprehensive legislation 'The Unorganized Sector Workers' Bill, 2004' which was approved by the cabinet in January 2004. The bill proposed to provide for safety, social security, health, and welfare of both wage as well as self-employed workers. However, the legislation restricts itself in covering only scheduled employments i.e., it would only cater to workers with normative employment relationship (National Commission for Enterprises in the Unorganised Sector, 2007). Hence, one can deduce that despite recommendations to include all types of economic activities, finally only economic activities listed as scheduled employment were included. Thus, the bureaucratic mind set dominated the articulation of policy finally. Interestingly, the social security part of the bill providing pension, accident insurance, and health insurance was piloted in 2004 which turned out to be unsuccessful. The failure was attributed to the voluntary contribution and lack of statutory backing. Moreover, the bill could not find its way to the parliament till 2004 National parliamentary election (National Commission for Enterprises in the Unorganised Sector, 2007). The election resulted in the change of the ruling party who were also committed to address the plight of unorganized sector workers. This resulted in the formulation of the Common Minimum Program (CMP) along with the establishment of the NCEUS. To oversee the effective implementation of CMP, National Advisory Council (NAC) was created (Shroff et al., 2015). Meanwhile, two bills proposing comprehensive legislation for regulation of employment and conditions of service, social security, and welfare of specific categories of

unorganized sector workers were also proposed by the National Centre for Labour and the National Campaign Committee for Unorganized sector workers in 2005. Along with this, NAC also formulated a standalone bill on social security for unorganized sector workers. The NCEUS proposed two separate bills for conditions of work and social security for unorganized sector workers. All these bills were discussed and deliberated in the 40th Indian Labor Conference, the draft bills proposed by NCEUS were taken forward for further discussion. Following this NCEUS came up with a set of bills separately for agricultural and non-agricultural unorganized workers, namely – The Agricultural Workers' Conditions of Work & Social Security Bill, 2007, and The Unorganised Non-agricultural Workers Conditions of Work & Social Security Bill, 2007 (National Commission for Enterprises in the Unorganised Sector, 2007). However, it should be noted that in May 2006 the commission submitted a standalone proposal on social security citing the institutional feasibility and timely implementation as the reasons (National Commission for Enterprises in the Unorganised Sector, 2007). The bureaucratic logic of governance overcame the rights and justice-based approach of the original bills. Subsequently, only the social security component was taken into consideration. From this, what was accepted from the vast body of work was only the most feasible part i.e., insurance-based intervention - 'Rashtriya Swasthya Bima Yojana' - in April 2008 by extensively utilizing the private sector (Shroff et al., 2015). The remaining bill was passed as an act in December 2008 and named as 'The Unorganized Workers Social Security Act, 2008' which differed extensively from what was proposed by the NCEUS (for details please see Annexures C- Appendix XXV) (National Commission for Enterprises in the Unorganised Sector, 2007). The existing literature, as well as the interviews with relevant officials, again appeared to be biased towards the 'inadequate implementation' of this act with a conviction that once implemented it will take care of all sections of unorganized workers. The central as well as the state governments have started implementing the act since January 2019. This development was driven by the supreme court's order to the MoLE in response to a petition filed by a group of people seeking implementation of the act. The MoLE has directed all the states and union territories to start registration of 10% of the estimated number of workers every month. Though the Telangana

state has started registration of workers, I could not obtain any information about the process. I was only made aware that the registration of construction workers has started. Also, the state has started implementing a pension scheme for the Beedi under the provisions of the act. Tracing of these group of workers – construction and beedi – appear to be relatively easier because of the existence of the respective welfare boards. How the state would trace and register those workers who neither have any organization nor any welfare board, such as workers in unorganized e-waste sectors, questions the very relevance of the act for these group of workers.

Within two months of coming into force of The Unorganized Workers Social Security Act (December 2008), the MoLE approved the National Policy on Safety, Health and Environment at workplace (NPSHEW) in February 2009. This gave an indication that the other part of the proposed bill i.e., the conditions of work, would have appeared as a policy. However, the key stakeholders denied any link between the two rather they highlighted that this particular policy was formulated in line with ILO convention no. 155 – Occupational Safety and Health Convention, 1981 (International Labour Organization, 1981). This reflects the compartmentalized functioning of various arms – NCEUS and DGFASLI (Directorate General Factory Advice Service and Labour Institutes) - of the same ministry (Ministry of Labour and Employment) with no coordination between them. Though India has not ratified this convention till today (International Labour Organization, 2021b), the policy was reported to be framed as per the direction given in the convention . The convention recommends of framing, implementing, and reviewing a national policy on occupational safety, occupational health and the working environment in consultation with the most representative organizations of employers and workers (International Labour Organization, 1981). However, the employers and workers organizations do not exist for all types of unorganized sector with the unorganized e-waste sector being one of the examples (Lundgren, 2012) which employ over a million workers in India (Baldé et al., 2017).

Developments under Ministry of Health and Family Welfare (MoHFW)

The availability and accessibility of occupational healthcare services constitute another dimension of occupational health and safety, particularly for workers in unorganized sectors. This had been recognized in the subsequent national health

policies - National Health Policy,1983 (Ministry of Health and Family Welfare, 1983); National Health Policy, 2002 (Ministry of Health and Family Welfare, 2002). NHP, 1983 recognized the presence of occupational hazards in the unorganized sector (agriculture) and, hence, recommended the extension of the Employee State Insurance Act to cover these workers (Ministry of Health and Family Welfare, 1983). The substandard nature of work in several sectors of employment were also recognized in NHP, 2002. The policy suggested the periodic screening of the health conditions of the workers, particularly for high-risk health disorders associated with their occupation (Ministry of Health and Family Welfare, 2002). In 2013, the National Urban Health Mission (NUHM) was devised to take care of the health issues of urban population (Ministry of Health and Family Welfare, 2013). A group of technical experts were asked to study and formulate the recommendations on the issue of urban health and healthcare seeking. The report highlighted the vulnerability-based identification of urban poor, and occupational vulnerability was one among the three types of vulnerability identified. Further, it reported various barriers faced by the vulnerable groups (particularly workers) while seeking healthcare in the public sector – ill-time consultations and waiting hours; location, distance, and accessibility of appropriate services; disrespectful behavior among others (Ministry of Health and Family Welfare, 2014). The following measures were recommended – city level vulnerability, facility and service mapping; organization of services at community level: nursing stations, ASHAs, and community volunteers; making UPHCs accessible to the poor (some of these include - functional timings of UPHCs from 3 to 9 PM daily for unorganized workers who cannot access service in the morning hours, counselling on occupational health, UPHCs in partnership with local medical colleges located in the urban area should conduct survey on occupational health problems of urban population in specific catchment of UPHC); Compulsory training of doctors in occupational health problems in 3 month modules (Ministry of Health and Family Welfare, 2014). Despite this detail report, no acknowledgement of the occupational vulnerability could be observed in the NUHM document though it has focused on health issues of vulnerable and marginalized population such as rag-pickers, street children, rickshaw puller, construction and lime kiln workers, sex workers and other temporary migrants, and attempt to address

their healthcare seeking through public sector, public-private partnership or other. The functional timing of UPHCs was recommended to be from 12 PM to 8 PM (Ministry of Health and Family Welfare, 2013). The NHP, 2017 has categorically recognized the agricultural workers whereas there is no explicit mention about the occupational vulnerability. It emphasizes that the issue of healthcare needs of the people living in the peri urban areas would also be addressed under the NUHM (Ministry of Health and Family Welfare, 2017). This disconnect between the NUHM main document and subsequent versions, and the document prepared by technical expert group is also reflective of the sort of disjointed policy arena in occupational health especially among the urban marginalized communities who are deriving their livelihood from precarious work. The non-recognition of occupational vulnerability severely restricts the ability of a policy/program in designing the suitable measures for various occupational groups whose occupational healthcare needs could be different from the general healthcare needs. Rather than contemplating on the content of the program/policy, limiting the discussion to implementation makes the occupational healthcare needs of various workers invisible. Though the NUHM is functional in all the Indian states including Telangana, the state had no specific provisions to address the occupational healthcare needs of slum dwellers. This could be understood from the fact that UPHCs remain functional from 9 am to 2 pm, the time during which workers could not afford to seek care. Instead of trying to understand that why workers are not utilizing UPHC, the state has added another tier to the health system in the form of 'Basti Dawakhana' in the urban slums, with a link to the nearby UPHC. The program officer, who I interviewed, was strongly convinced that the Basti Dawakhana would address the occupational healthcare needs of the slum dwellers as it consisted of a trained MBBS doctor, a staff nurse and other supporting staff. It would function on all days from 9 am to 4 pm. Interestingly, the officer denied the need of any separate training of healthcare providers to deal with occupational health problems. The fact that Basti Dawakhana will be a solution for occupational health problems reflects the biomedical paradigm which governs the occupational health where there is no acknowledgement of precarity and, hence, there revolves skepticism about its effectiveness. This could be understood when the officer reported that Basti Dawakhana is being utilized more by

the women and children which corroborates with the findings of the first phase of the study (UPHCs were primarily utilized by women and children).

"We are keeping MBBS doctors, and I don't think a separate training in occupational health is required. These doctors are posted in areas which are generally inaccessible, are in bad conditions. It is not even safe for doctors to be there, but I am proud of our doctors, despite all these they are ready to serve there." – [PIDI5 – Programme Officer, NUHM]

The very first NHP recommended to bring the unorganized sector workers under the purview of ESI scheme (Ministry of Health and Family Welfare, 1983). Though a couple of years back an attempt was made in the form of pilot programs in Delhi and Chennai to bring certain group of unorganized workers – autorickshaw drivers – under ESI, the program could not be succeeded due to various reasons, as mentioned by one of the officials from one of the regional ESIC office. The official further informed that the ESIC is struggling even to cater to organized sector workers so there is no scope for looking into unorganized sector workers.

The above discussion shows that despite a history of the development of an alternative discourse in both the ministries that seeks to acknowledge not only the existence of workers, who are mostly self-employed or who do not share clear employment relationship with their employers in the unorganized sector, but also their unique attributes needing different strategies, their occupational safety and healthcare needs still remain invisible. The two ministries and even departments within the same ministry appeared to work in silos. While the FNCL in 1969 recommended a periodic survey to understand the problems of workers in unorganized sector (National Commission for Enterprises in the Unorganised Sector, 2007), the first NHP restricted itself only to agricultural workers and proposed extension of ESI (Ministry of Health and Family Welfare, 1983). Similarly, the SNCL in 2002 proposed to cover occupational safety and health of all workers (National Commission for Enterprises in the Unorganised Sector, 2007). Though the second NHP recognized the sub-standard working conditions, the solution suggested was the periodic screening of high-risk workers (Ministry of Health and Family Welfare, 2002). While the NCEUS came up with a detail set of recommendations to improve the employment and working conditions of all workers in the unorganized

sectors (National Commission for Enterprises in the Unorganised Sector, 2007), DGFASLI framed NPSHEW with a focus on organized sector workers or workers who share employment relationship with their employers (Ministry of Labour and Employment, 2009). Similarly, while the third NHP recommends monitoring of all worksites and delegates the responsibility to NUHM (Ministry of Health and Family Welfare, 2017), the NUHM largely focused on UPHCs timings (Ministry of Health and Family Welfare, 2013). Figure 4.7.1 shows the various developments that happened for the workers beyond the normative employment relationship (workers in unorganized sectors)

4.7.3.2 Individualization of responsibility

Like in the previous sub-section, I have attempted to explore the individualization of responsibility by asking the following three questions:

what is the 'problem of occupational safety and health' represented to be in the key policy documents or one can also say how the 'problem of occupational safety and health' has been produced/constructed by the key policy documents; What presuppositions and assumptions underlie this representation of 'problem'; How has the problematization of 'lack of training and awareness' has emerged.

What is the 'problem of occupational safety and health' represented to be in the key policy documents? What presuppositions and assumptions underlie this representation of 'problem'?

The policy documents (NHP, 2017 and e-waste management policy, 2017) further appear to produce/conceptualize the problem of occupational safety and health as a *problem of lack of training as well as lack of awareness* among workers processing e-waste in unorganized sector.

The problematization of occupational safety and health as 'lack of training and awareness' appears to rest on the notion of 'individualization of responsibility'. This notion resonates with the doctrine of individual responsibility advocated by the neoliberal governance paradigm which believes that the security provided by the welfare state deters individuals from improving their own living conditions (Pendenza and Lamattina, 2019). This emphasis on making an individual responsible for his/her personal well-being engenders a climate where structural inequalities are converted into individual problems and, hence the responsibility of managing these

problems have been redistributed from the state to the individuals. This individualization of problem, by extricating it completely from the structural factors, propagates the belief that anyone can overcome obstacles if only they work hard enough (Pendenza and Lamattina, 2019).

The assumption of 'individualization of responsibility' could be further illustrated using the domains of training and awareness creation (described in the previous section) identified from the key policy documents. It has been assumed that inadequate/no training along with lack of awareness lead to poor occupational health among workers, in general. With respect to workers in the unorganized e-waste sector, it has been assumed that the workers 'lack' awareness about the 'unsafe' practices lead to health problems. Further, their 'lack' of training restrict their occupational mobility to the organized sector (Government of Telangana, 2017). Workers processing e-waste in the unorganized sector were aware about the threat their work possess to their health however they had no option than processing e-waste. They denied any need of formal training as they had carved out their own way of processing e-waste. They learned it by observing their family members or friends.

It is interesting to note that the organized e-waste processing sector, predominantly, outsources the e-waste to the unorganized sector. This is happening when the e-waste management rules are in place for almost a decade now (Ministry of Environment and Forests, 2011). This could be substantiated from the narrative of one the workers who informed - "*These companies (e-waste recycling) collect scrap (e-waste) through the tender process, and then forward those to businessmen like me. I can give you one example also: a recycling company in Madras collects scrap from Samsung, Philips, LG, and others and give to other businessmen like me. These companies cannot do the work done by us."* So, then what type of occupational mobility the policy document is emphasizing on, is a pertinent question to raise here. The individualization of responsibility by attributing poor occupational safety and health to the lack of training and awareness shifts the attention from the larger structures perpetrating precarity to the 'individual' worker who is many cases is also an employer

How has the problematization of 'lack of training and awareness' has emerged?

Workers, since historical times, have been treated as economic entities whose primary role should be to contribute to economic productivity (Qadeer and Roy, 1989; Vilanilam, 1980). With the subsequent formation of International Labor Organization and trade unions along with massive labor movements, various laws and regulations were framed to improve health and well-being of workers in the newly independent India (Mitchell et al., 2014). However, the Royal Commission on Labour highlighted that the investment in health does not only promote the well-being of workers but *is bound to produce great economic advantage*. Hence, one can deduce that the underlying motive of the laws and regulations even in the welfarist India was to promote economic productivity rather than a true interest in the welfare of workers. For a large majority of workers (predominantly contract and casual workers in the industries), the employers had no welfare responsibilities, they had to depend on their resources. Similarly, workers in small industries such as beedi-making, handloom-weaving, tanning etc., were excluded from the laws which were meant to protect them (Qadeer and Roy, 1989). Here, it is important to note that there were no welfare schemes for workers who fell outside the normative employment relationship and, hence, they had to take care of their own safety and health. The similar trend or we can say further worsening of conditions of workers could be observed with the adoption of neoliberal economic policies. India had to comply to the market rules with 'flexibility of labor' being one among them (Standing, 2011). This was justified on the ground that a free market is incompatible with unfree labor, and labor laws need to be relaxed to make the labor free. The relaxation of labor laws resulted in further informalization of labor which means though there was acceleration in employment rate, quality of employment got deteriorated. This means more and more workers were left to fend for themselves in the Neoliberal India (Standing, 2011). This happened despite Neoliberal claims that economic reforms will accelerate the economic growth, as well as employment rate and wage, which would subsequently improve working conditions and socio-economic circumstances of poor and vulnerable workers (Giri and Singh, 2017). The neoliberal ideology promoted the idea of individualisation of risk, whereby responsibility for managing the risks of contemporary life have been redistributed from the state and economy to

the individual, thereby, making individual responsible for taking care of himself/herself (Chowdhury, 2021). Based on this argument, again the discourse has made the workers responsible for their own fate and, consequently, structural inequalities perpetrating precarity have been completely overlooked. The complex issue of precarity has been completely depoliticized and has been reduced to an 'individual' issue. This could be further illustrated from a report on occupational safety and health prepared by a working group constituted by the planning commission of India (Ministry of Labour and Employment, 2011). The report brought to light the occupational safety and health issues along with existing laws and regulations in mines, manufacturing and port, and unorganized sector. Whereas the initial two were described in detail nothing much could be observed for unorganized sector. The report highlighted different types of unorganized sector – agriculture, construction, shops, and establishments, beedi and cigar manufacturing, eating places, waste management, and homework. However, the recommendations to improve occupational safety and health were made based on preventive 'self-management principle'(Ministry of Labour and Employment, 2011) thereby making workers responsible for her/his safety.

What is left unproblematized in both the problem representations or what are the silences?

I have explored the possible silences underlying the problematizations by critically analyzing the actions suggested in the key policy documents, from the in-depth interviews conducted among the workers, among the key stakeholders as well as from the literature on the unorganized sector. These are described below:

The construction of problems by the key policy documents has failed to go beyond the normative employment relationship, and hence the interventions suggested in these documents appear to be irrelevant to those economic activities where this relationship is either absent or obscured. The economic activities carried out by the workers in unorganized e-waste processing sector is one such example. The larger discourse surrounding the occupational safety and health of workers appear to revolve around the employment relationship. Though a few initiatives have been proposed to address the occupational safety and health of workers who fall outside

this relationship, these appear to focus on the biomedical aspect, thereby, completely missing the larger issue of precarity.

The domains (described in the previous section) identified from the key policy documents have been employed to further illustrate the possible silences:

Strengthening of implementation machinery – Though it has been proposed that the strengthening of labor system along with provision of subsidy and loan, and penal provisions for violating the laws would improve implementation of the existing laws and subsequently occupational safety and health of all workers (Ministry of Labour and Employment, 2009), it is important to note that the work done by the workers processing e-waste in the unorganized sector is not recognized as a type of 'employment' either by the center or by the state. I had observed e-waste processing units with more than 10 workers, they were also observed using machine (for stripping wire) to carry out their work. Also, a few employers had two-three units consisting of 20-30 workers in total. These workers remain invisible to the system though as per one of the estimates more than 90% of e-waste generated in India is processed by the workers in the unorganized sector (Awasthi and Li, 2017). Their invisibility could be substantiated from the fact that despite repeatedly asking about the provisions available for workers in unorganized e-waste sector one of the officials from the State Labour Department kept using the word 'ragpicker' while others recognized them as somebody working with the 'iron-scrap'. The Labour Department could operate only when the employment is listed under 'scheduled employment'.

"We don't have any attachment with these (workers in the unorganized e-waste sector) workers, we have never met them. I think these waste processing units fall under the category of middle processing units because whatever iron they collect, they will sell to another company. With that iron they will make rods" – [PIDI2 – State Secretary of Indian Federation of Trade Union]

"Labour department has its role only if something is registered as an industry. It takes action when a labor complains about the employer/industry. Waste management, in unorganized sector, is not recognized as an employment. You (the researcher) can create a new schedule by defining the waste management as an

'employment', then it would become an industry and we can ask the government to have schemes for these workers" – [PIDI3 – Official from the State Labour Department]

It has also been proposed that making the existing laws consistent with international standards would facilitate the implementation. ILO is a tripartite United Nations agency which brings together governments, employers, and workers of 187 member states to set labour standards, develop policies and devise programs promoting decent work (International Labour Organization, 2021a). Though its conventions appear to cater to "all economic activities", these categorically recognize the need of employment relationship for their applicability. Since 1999, the ILO has extended its reach to include self-employed and other workers outside traditional employer-employee relationship by promoting opportunities for women and men to obtain decent and productive work, in conditions of freedom, equity, security and human dignity (National Commission for Enterprises in the Unorganised Sector, 2007). However even after two decades of this ILO is struggling to implement its decent work agenda in the unorganized sector. The ILO in its recent report highlighted the following key challenges – the tripartite mechanism in the context of changing world of work; creation of better quality jobs; skilling, re-skilling and upskilling of workers in line with current and future demand of the economy; rapid transition from informal to formal employment; greater access to social protection and its universal coverage; reduce inequalities and safe workplaces, among others (International Labour Organization, 2018b).

Characteristics of the work situation – Though it has been proposed that employers and employees can work in co-ordination with each other to improve the occupational safety and health at workplace and that it is possible for employers to establish the occupational safety and health management system (Ministry of Labour and Employment, 2009), the relationship between an employer and an employee is clear in organized sector which is recognized and registered. This clearly defined relationship is the basic for the applicability of labour laws in the organized sector. Hence, there exists a possibility for workers and employers working together and sharing a responsibility to achieve safe and healthy working conditions. The existence of a clear employment relationship could also be observed in certain

unorganized sector such as construction work, beedi work. This relationship gives workers legitimacy to demand welfare measures. They have been able to obtain the same with the support of trade union members. On the other hand, workplace in the unorganized e-waste processing sector is not registered. Workers in this sector reported to be either self-employed or they were working in small units under their relatives or friends or others as wage workers. As the work was predominantly carried out with the help of closed contacts, the existence of a clear employment relationship appeared to be obscured. The workers did not have any right to demand anything from their employer even if he was exploiting them as this was reported to be only source of livelihood for them.

"In mid-1990s (when Andhra Pradesh and Telangana were not separated) I called 25000 workers to Hyderabad. We had a big meeting and we invited Chandrababu Naidu, the then CM. I told him that these workers construct big buildings but they themselves have no place to stay. He then told that he will take this issue to the Central government and as a result The Building and Other Construction (BOC) Workers act came in 1996 but the govt did not have fund. Then we, as a union, suggested that we will not ask money from the government, but we can ask the builders to contribute in the form of cess (1% or 2%). – [PIDI1 – President, Centre of Indian Trade Unions, Hyderabad]

Training – It has been assumed that training of workers improves occupational safety and health (Government of Telangana, 2017; Ministry of Labour and Employment, 2009). However, workers reported that they were born and brought up in this area, they had grown up by observing this market and hence, they learned processing e-waste by either observing their family members/relatives/friends who used to work with e-waste or by themselves. There was a consensus among the workers that no formal training was required for doing this work.

"I am here since my childhood, and so I learned by observing others." – [IDI8 – worker aged 23]

Awareness creation – It has been assumed that the provision of appropriate information or awareness creation among workers and employers would improve occupational health of workers (Government of Telangana, 2017; Ministry of Health

and Family Welfare, 2017). However, it was found that the workers processing e-waste in the unorganized sector were aware of the danger posed by their work, but they reported having no other choice than to do this work.

"There are workers who use chemicals to remove silver and gold coating from the scrap and they are mostly from other states. They get paid more than the dismantlers as their work is risky. In-spite of knowing that this work poses a threat to their health they still work that too only for their livelihood. They think that now they are getting money which is required for survival." – [KII – a senior member of the community

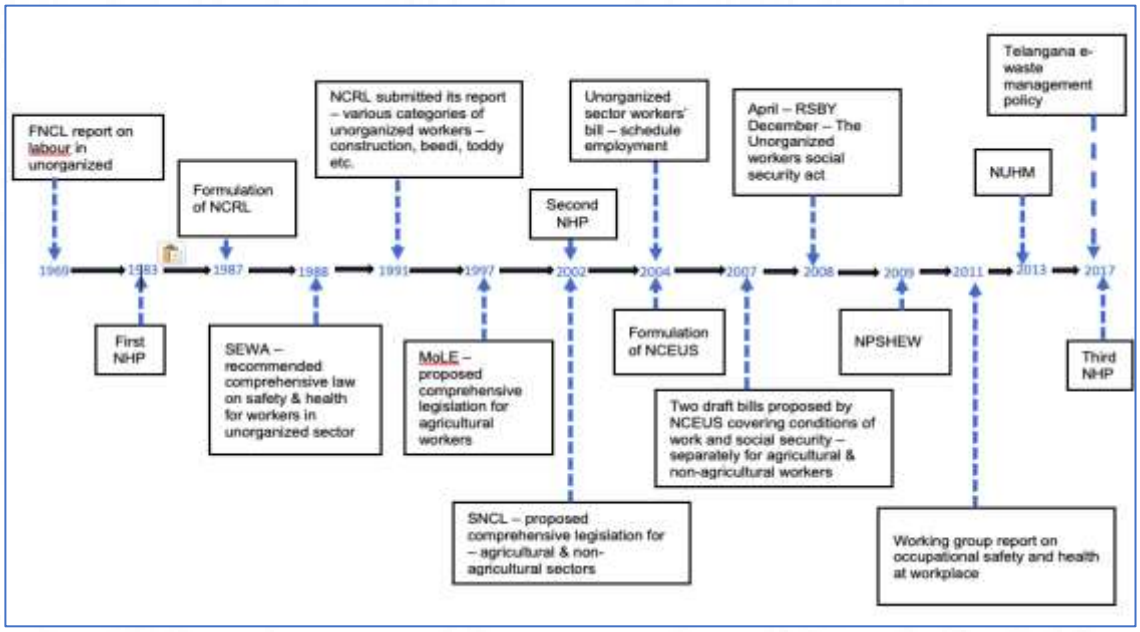

Fig. 4.7.1 showing various development that happened for the workers beyond the normative employment relationship (workers in the unorganized sector)

4.8: BRINGING FINDINGS OF BOTH PHASES TOGETHER

In previous sections I have described findings under various domains of the conceptual framework where precarity is clear. In this section I have attempted to bring the findings of both phases together. Moving a step ahead, I have further attempted to categorize the findings under the following headings through the lens of precarity at various levels: The day-to-day reality of workers; the invisibleness of their occupational healthcare needs to the health system; the invisibleness of their occupational safety and health needs to the Labour Department and to the Pollution Control Board; and the invisibleness of their occupational safety and health needs in the policy discourse. I have described these below:

4.8.1 The day-to-day reality of workers

Persistence of precarious livelihood since decades

Workers in Bholakpur have a history of precarious livelihood since decades. Before turning into a hub for waste processing Bholakpur was renowned for its leather tanning industry. It was one of the epicenters for leather export. The tanning work was primarily looked after by the members of the Muslim community as well as the scheduled caste community as processing animal hides (leather) was considered (still considered) a 'dirty' work. The leather industry suffered a severe blow in the late 1980s due to macro-level policy changes which severely affected the small businessmen and the labourers. They were left with no option than to look for alternative livelihood opportunities as many of the tanneries had to be shut down. Interestingly, it is again another 'dirty work' i.e., waste processing, which emerged as the source of livelihood for the people in Bholakpur. While the workers have moved from leather processing to waste processing (including e-waste), the uncertainty associated with their livelihood appears to be constant.

Precarious land tenure

Being located at the heart of the city, the price of the land is soaring up prompting the government to handover it to the real estate i.e., to the corporate sector. The government is making efforts, for example by labelling them as 'pollution creator', to relocate them and their families to the outskirts. In other instance, workers were held responsible for cholera outbreak in the area though it happened due to cross-

contamination of sewage water with drinking water due to faulty pipelines. To counteract the issue of relocation, various occupational groups formed their own welfare committees. The workers reported that they were ready to move provided the government fulfills their demands which included provision of basic facilities such as housing, electricity, a school for children, and most importantly the 'market' where they could continue their existing occupation. However, they are yet to get any response from the government.

The demography of precarity

As the current study is about workers processing e-waste, the remaining section is focused on this group.

The involvement of a huge workforce in e-waste processing work in the study area demands an exploration of who they are i.e., their socio-demographic profile. In the study area, I found two broad categories of workers – adolescent males and adult males. Though I could not formally include adolescents in the study due to ethical constraints, I had informal conversations with them. I found only a negligible number of women (three), in both phases of the study, working with e-waste in the field area. I attempted to explore the reason and was informed that women would be working at their home. In-spite of numerous efforts I made in the form of visiting households in the community I could not track any. On further exploration it was found that women were working mostly with plastic waste.

E-waste processing was primarily carried out by the adult males belonging to the Muslim community (99.6%) in unregistered units (98%). A majority (40.3%) of them aged 24 years or less and with 10 or less years of schooling (68%). Poverty emerged to be the main reason for the interruption of their education. Other than a few (7.26%), majority of them were locals who followed the footsteps of many of their family members, relatives, and friends, who had been processing e-waste for long. There were instances of the work being carried over by off-springs or members of subsequent generations indicating the intergenerational practice of e-waste processing.

Precarious employment and working conditions

Based on the emerging importance of employment as well as working conditions as key determinants of occupation health, I have explored both in the context of e-waste processing in the unorganized sector.

Precarious employment conditions

Workers were predominantly self-employed (64.8%) either alone or with their family members or friends. The obscured/minimal existence of employment relationship ruled out the need of any written contract. The contract was found to be absent even among those workers who were hired by the employers and who were not close relatives of the employers. The absence of contract compelled as well as allowed the workers to change their workplace frequently depending on the availability of work. The median number of working days were six but 14.5% of workers reported working for all days in a week with Friday as a half working day. The median number of hours of work on a full working day was nine with approximately 17% of workers reported working for ten or more than ten hours on a full working day. However, the interviews revealed that their working hours were not fixed. There was no uniformity in the wages received, different workers reported getting different wages at various time-points which lay between 7000-12000 INR. The reasons explaining this difference included – number of working hours per day, experience in processing of e-waste, and working with chemicals. Workers did not receive any formal training for doing this work, they learned processing e-waste either by observing someone (58.13%) or by themselves (28.46%). A small percentage of them (13.41%) reported working under someone else before starting their own business. Workers in half of the units reported having bandage and antiseptics (57%). However, on observation nothing other than the bandage could be found, that too, in a few units. Workers, in rest of the units with no first-aid component, reported getting bandage from the nearby medical stores following any injury. A majority (73.5%) of the workers reported their employers taking care of their immediate healthcare expenses in case of serious injuries or health problems arising out of their work. However, there was no concept of paid leave. Many of them were enrolled in the state's health insurance scheme that covers emergency/serious conditions requiring hospitalization. However, it appeared to be of no use to them as they could

not afford to get hospitalized even for a day unless they develop some life-threatening condition. Unlike workers processing plastic or iron, workers working with e-waste (other than a few who process wires) had no separate organization that represented them or looked after their welfare.

Precarious working conditions

A majority of them (96.35%) were working in rented units (a physical structure with cemented walls and roof). However, there were also a few (3.6%) who did not have any structure to sit and work, and, hence, they could be observed working on the roadside. The units were cramped with no windows or no additional facility for ventilation other than the entrance.

Dismantling of small or large items along with stripping/burning of wires/cables was reported to be the commonest (40%) e-waste processing activity, a couple of them (1%) also reported using chemicals to extract metals. Hammer, chisel, screw-driver were utilized for dismantling whereas paper-cutter, knife, blade were used for stripping wires/cables. In addition, a machine was also utilized to strip the wires but not everyone could afford it as one had to pay approximately 40,000 INR. There were also wires/cables, which workers reported too thin to strip manually or mechanically and, hence, were burned to obtain the metals. The workers reported burning wires outside the city, mostly in a forest or agricultural land. However, on a few occasions, I observed them burning wires as well as an electric motor nearby their units. A majority (65%) of workers (both employers as well as employees) reported never using any personal protective (PPE) equipment while working whereas 31% mentioned using it sometimes. Gloves were the commonest (63%) PPE reported to be used by those who mentioned using any safety equipment. However, I could hardly observe three or four among them with gloves, that too with woolen gloves, in my entire data collection period. There was a consensus among workers that no safety equipment was required for processing e-waste with safety equipment slowing down their work appeared to be the prominent reason.

The median number of hours of continuous sitting while working on an average working day was three. Predominantly, they were observed to be sitting on the floor whereas in a few instances use of a low-lying stool/chair could be observed. Those

engaged in stripping wires using machine were observed to be utilizing low-lying stool/chair at their workplace. Repeated bending of neck as well as repeated movement at wrist while breaking e-waste were the commonest repetitive movements observed mostly among the dismantlers. A majority (56%) of the workers reported bending and lifting heavy object such as bundle of thick wires (telephone cable), refrigerator, washing machine etc. at the workplace at least once every day on an average working day.

Occupational health problems

The precarious employment and working conditions in the unorganized e-waste processing units could have bearing on their health. 17% of workers reported having injury in the past two weeks whereas 41% had reported encountering it in the past two years preceding the study. Workers came up with their own categorization of injuries, they categorized injuries as 'normal' or 'severe'. They were routinely getting injured, and the major reason cited for this was the nature of their work. The injuries are so common that they care about these injuries only when these are "severe". Musculoskeletal problems emerged to be another important health issue with 45% of workers reported any of the three – neck trouble, shoulder trouble, low back trouble - in the past one month preceding the study. Low back trouble emerged as the commonest (55%) musculoskeletal problem, for which prolonged sitting as well as bending and lifting heavy weight emerged as the reasons. 13% of the workers also reported skin problems in the past one month preceding the study with itching being the commonest one, for which the type of e-waste they had to deal with, as well as unhygienic working conditions, emerged as the reasons. The other reported health concerns include eye/s problems in the past one month with watering of eyes (6.5%), breathing difficulty (2%) and stomach related issues with burning sensation (7%) during the past one month preceding the study. Interestingly, it was brought to the notice that dismantlers were at a high risk of developing tuberculosis as they end up inhaling gas while breaking refrigerator and that particular gas causes the disease.

4.8.2 The invisibleness of their occupational healthcare needs to the health system

Workers labeled certain types of problems as "normal" for which consulting a healthcare provider deemed unnecessary. They approached a healthcare provider

only when they felt the particular problem to be “serious”. They preferred consulting a healthcare provider in a nearby private or charitable clinic for any kind of health problem. Good treatment by the healthcare providers, trust between the workers and healthcare providers, nearby location of the clinics, and convenient timings emerged as the reasons for seeking healthcare in private and charitable clinics. A few of them reported utilizing the state-run tertiary care center for severe injuries or extreme health conditions. However, no one reported availing of healthcare services from any of the two UPHCs, and the reasons emerged included – these were addressing the healthcare needs of women and children, inconvenient functional timings and waiting time, non-availability of medicines, and inappropriate behavior by the healthcare providers. Though frequent health camps were happening in the area, 15% of workers reported attending it any time in the past six months. The health camps were also predominantly catering to women and children. Inconvenient timings of the camps further excluded workers from seeking care.

The healthcare seeking practices could be dependent on their employment conditions, types of health problems encountered as well as on the availability and accessibility of healthcare system. The survey findings showed that a little more than a half (53.6%) of the workers, who encountered injury in the last two weeks preceding the study, reported consulting a healthcare provider for the same whereas 94% of the workers, who encountered in the past two years while working with e-waste, reported consulting a healthcare provider for the same. They consulted the healthcare provider because of the severity of the injury. A majority (91%) of those, who reported encountering injury at any point of time, consulted a private healthcare provider in the vicinity. Interestingly, one practice that was almost universal for those requiring medical care was the use of TT injections. A majority (67.7%) of the workers reported that they had a TT injection in the last six months out of which 57.8% of them reported getting it once, 32.5% reported getting it twice, 5.5% reported getting it thrice, 0.6% reported getting it four times whereas 3.6% reported getting it six times in the last six months either from a private clinic or a charitable clinic. Despite the availability of the TT vaccine free of cost at UPHCs, workers’ first point of contact for getting it was either a charitable or a private clinic (reasons for their preferences are mentioned in the earlier sections). The doctors from these

private and charitable clinics recognized that such frequent TT injections were not warranted. However, they continued to prescribe the injections for several reasons including the lack of records, quality of the injections available, workers' belief system as well as their memory. One of the common refrains was that if they do not give the injection someone else would or that the workers insist on having the injection – with the providers merely complying. The workers consulted a healthcare provider for the musculoskeletal pain (particularly low back) when a particular threshold was crossed. Almost one-third of the workers with low back trouble reported consulting any healthcare provider out of which again a majority (82.3%) went to private healthcare providers. Interestingly, hijama emerged as one of the cultural practices particularly for low back pain and shoulder pain. There was a consensus among the workers that the pain was caused by 'waste blood or black blood'. They could get rid of this pain only when the waste blood is removed through the process of hijama. The workers had to travel to other parts of the city to get it done as this was not conducted frequently in the area, occasionally, a welfare society in the area would conduct camp for this. The workers considered skin problems (itching/rashes) as 'normal' because of the type of work they were engaged with. They resorted to washing hands when they had itching (due to their work) or taking bath after finishing their routine work every day. The application of coconut oil after washing hands with soap and water, especially after stripping telephone cables, provided relief from itching. The healthcare providers were consulted only when the problem caused a particular threshold. Other than consulting a healthcare provider, eating jaggery was used as a way to deal with breathing difficulties.

4.8.3 The invisibleness of their occupational safety and health needs to the Labour Department and to the Pollution Control Board

I spent almost seven months in the study area however I could not observe any health inspectors or anyone from the labour department conducting inspection there. A couple of workers reported occasional visits by the officials from the State Labour Department. The intent of the visits was to check for child labour. I too observed many minors processing e-waste. However, workers reported that the officials do not do anything, they take money from the employers and go back.

While workers also reported occasional visits by the officials from the State Pollution Control Board (SPCB), the purpose of their visit is to check pollution level in the area. They have nothing to do with occupational safety and health of workers. Though I tried many times to reach to the officials from the SPCB, I could not meet or have a conversation with anyone.

4.8.4 The invisibleness of their occupational safety and health needs in the policy discourse

The repeated reading of the interventions/actions suggested in the key policy documents, through the lens of WPR, in connection with what I observed/found on the ground gave the impression that these policies (NPSHEW, NHP) exclude workers processing e-waste in Bholakpur. Hence, it is pertinent to question the inclusivity of these policies. Secondly, the existing evidence suggests that that employment and working conditions are determined by the macro-level factors and workers, predominantly self-employed ones, have no control over these. However, the policies appeared to put the onus on the workers and, hence, individualized the responsibility regarding the occupational safety and health. For instance, though Telangana e-waste management policy categorically focus on workers in the unorganized e-waste processing sector, the interventions in the form of creating awareness and provision of training (Government of Telangana, 2017) hint the individualization of responsibility. I have described both these – inclusivity of the policies and individualization of responsibility –by utilizing the questions suggested under WPR approach.

<u>Inclusivity of the policies</u>

The policy documents (NPSHEW and NHP) appear to produce/conceptualize the problem of occupational safety and health as a *problem of inadequate implementation of the existing laws and regulations* regarding occupational safety and health in all economic activities.' This problematization could have emerged from the deep-seated assumptions of the existence of an *'inclusive system'* which caters to occupational safety and health of all workers in all economic activities. The policies assume that the existing laws/regulations are sufficient to address the occupational safety and health of all workers. This could have been shaped by the

assumption that the unorganized sector is temporary and with due course of economic growth and development it would be subsumed by the organized sector (Kannan and Papola, 2007). Hence, once the unorganized sector is subsumed by the organized sector the occupational safety and health of workers would automatically be taken care off by the laws which govern the occupational safety and health of workers in the organized sector. However, the interventions suggested in the policies give an impression of a 'system' which largely restricts itself to certain categories of economic activities carried out by workers under the label of 'schedule employment' with a clear employment relationship (Ministry of Labour and Employment, 1948). The concept of schedule employment is based on the notion of 'employment relationship' which forms the legal link between employers and employees. It exists when a person performs work or services under certain condition in return for remuneration. It is through this link that reciprocal rights and obligations are created between the employee and the employer. All the existing labor laws operates through this legal link. Similarly, the policies on occupational safety and health are also based on employment relationship. However, workers processing e-waste in the unorganized sector were predominantly self-employed either alone or with the help of their family members. Though a few units had hired workers, the employment relationship was unclear. Hence, they appeared to be excluded by both the ministries. However, the issues related to occupational safety and health of workers outside the normative employment relationship did appear in the discourse, in both the ministries – Ministry of Labour and Employment, and Ministry of Health and Family Welfare - since late 60s. Many strategies were recommended by FNCL, SEWA, NCEUS (National Commission for Enterprises in the Unorganised Sector, 2007), TRG for NUHM (Ministry of Health and Family Welfare, 2014) to address the occupational safety and health of workers in the unorganized sector however the policies appear to keep excluding a large section of unorganized sector workers who are predominantly self-employed or who do not share a clear employment relationship with their employers. Workers processing e-waste in the unorganized sector is one such example.

Individualization of responsibility

The policy documents (NHP, 2017 and Telangana's e-waste management policy, 2017) further appear to produce/conceptualize the problem of occupational safety and health as a *problem of lack of training as well as lack of awareness* among workers processing e-waste in unorganized sector.

The problematization of occupational safety and health as 'lack of training and awareness' appears to rest on the notion of 'individualization of responsibility'. This notion resonates with the doctrine of individual responsibility advocated by the neoliberals who believe that the security provided by the welfare state deters individuals from improving their own living conditions. This emphasis on making an individual responsible for his/her personal well-being engenders a climate where structural inequalities are converted into individual problems and, hence the responsibility of managing these problems have been redistributed from the state to the individuals. This individualization of responsibility, by extricating it completely from the macro-level factors, propagates the belief that anyone can overcome obstacles if only they work hard enough (Pendenza and Lamattina, 2019).

The individualization of responsibility could have emerged from the way workers have been seen throughout the history. They have been treated as economic entities whose primary role should be to contribute to economic productivity (Qadeer and Roy, 1989; Vilanilam, 1980). With the subsequent formation of International Labour Organization and trade unions along with massive labor movements, various laws and regulations were framed to improve health and well-being of workers in the newly independent India (Mitchell et al., 2014). However, the Royal Commission on Labour highlighted that the investment in health does not only promote the well-being of workers but *is bound to produce great economic advantage*. Hence, one can deduce that the underlying motive of the laws and regulations even in the welfarist India was to promote economic productivity rather than a true interest in the welfare of workers. For a large majority of workers (predominantly contract and casual workers in the industries), the employers had no welfare responsibilities, they had to depend on their resources. Similarly, workers in small industries such as beedi-making, handloom-weaving, tanning etc., were excluded from the laws which were meant to protect them (Qadeer and Roy, 1989). Here, it is important to note that

there were no welfare schemes for workers who fell outside the normative employment relationship and hence they had to take care of their own safety and health. The similar trend or we can say further worsening of conditions of workers could be observed with the adoption of neoliberal economic policies. India had to comply to the market rules with 'flexibility of labor' being one among them. This was justified on the ground that a free market is incompatible with unfree labor, and labor laws need to be relaxed to make the labor free. The relaxation of labor laws resulted in further informalization of labor which means though there was acceleration in employment rate, quality of employment got deteriorated. This means more and more workers were left to fend for themselves in the Neoliberal India (Standing, 2011). This happened in spite of Neoliberal claims that economic reforms will accelerate the economic growth, as well as employment rate and wage, which would subsequently improve working conditions and socio-economic circumstances of poor and vulnerable workers (Giri and Singh, 2017). The neoliberal governance promotes the idea of individualisation of risk which means, whereby responsibility for managing the risks of contemporary life have been redistributed from the state and economy to the individual, thereby, making individual responsible for taking care of himself/herself (Pendenza and Lamattina, 2019). Based on this argument, again the discourse has made the workers responsible for their own fate and, consequently, structural inequalities perpetrating precarity have been completely overlooked.

The construction of problems by the key policy documents has failed to go beyond the normative employment relationship, and hence the interventions suggested in these documents appear to be irrelevant to those economic activities where this relationship is either absent or obscured. The economic activities carried out by the workers in the unorganized e-waste processing sector is one such example. The larger discourse surrounding the occupational safety and health of workers appear to revolve around the employment relationship. Though a few initiatives have been proposed to address the occupational safety and health of workers who fall outside this relationship, these appear to focus on the biomedical aspect, thereby, completely missing the larger issue of precarity.

CHAPTER 5:
REFLECTIONS AND LEARNING THROUGHOUT MY PHD JOURNEY

5.1 Struggle to find the appropriate language

I was grappling with a feeling of discontent after submitting my master's thesis. The sense of 'something wrong with my work' was constantly haunting me. Obviously, there were methodological issues, but I was bothered about something else. This forced me to pursue further research in the same area with the same community, and I ended up getting enrolled in a PhD program. However, when I was asked to submit a proposal, I came up with a proposal which was nothing more than what I did in my master's work. To illustrate this, let me put here objectives of my then submitted proposal. I had the following three primary objectives: (a) to understand the level of awareness prevailing among informal handlers about e-waste and consequential health hazards when handled informally; (b) to measure relationship between informal handling of e-waste and consequential health hazards among handlers; (c) to suggest effective remedial measures ensuring sanitary handling of e-waste. This was a very mechanical proposal as I was more than 100 per cent sure that this was not the way to approach what I wanted to study. Despite repeated attempts I could not succeed in articulating my concerns.

After getting enrolled on PhD program, I realized that public health is far beyond clinical epidemiology and biostatistics. I started reading books/papers from various disciplines, including anthropology, sociology, developmental economics. I know this sentence will bring shock to the reader(s). Still, I would want to admit that it was only during my initial days of PhD I was introduced to the following terminologies – perspectives, theories, frameworks, paradigms, positionality and so on. Initially, these words were too difficult for me to understand; however, I did manage to get some essence of these words gradually over the period. I read in-depth and had frequent discussions with my colleagues and friends from other disciplinary backgrounds (predominantly social science) on a wide array of topics, including the relevance of theories in a research, the concept of equity, power, the role of community in research, to name a few. This initial one and a half years of PhD work did change my thought process as a researcher. However, despite this I was failing to communicate to a larger audience, other than a few, what I actually wanted to study. Everybody had this impression that I wanted to study health problems among workers who were exposed to e-waste. I think I was not using the correct 'language'

or should I say that the others did not understand my language, I don't know!!! I managed to refine my proposal which to some extent reflected my understanding of new concepts and subsequently new public health. Though I gained some clarity, I was still struggling to make my 'language' comprehensible to larger audience. Amid my struggle to find an 'appropriate language', I was then introduced to a completely different type of literature that unpacked new concepts, the concept of precarity being one among them. The introduction to the concept of precarity was like a 'eureka' moment for me. Suddenly, I felt I had discovered a 'language' to convey what I exactly wanted to do. This feeling is difficult to describe in words (Soon after this realization, I immediately made calls to a couple of my friends and informed them that finally, I understood what I am doing!!!!!!). I remember people mocking me when I used the term 'neoliberalism', they believed I was throwing 'big-big word' without any sense, and I could not defend its use in the absence of the appropriate 'language'. But I think after getting introduced to the concept of precarity and the relevant literature, I had a language to express my research intent and thus defend myself. I was confident enough to appropriately use and connect the term 'neoliberalism' to the work I wanted to pursue, going beyond its rhetorical usage to a more nuanced theoretical application. I made maximum effort to understand the theoretical aspect underlining my proposed work, which further made my language coherent to the larger audience. I had some satisfaction as I assumed that I had acquired essential knowledge to start my fieldwork.

5.2 Struggle to get in and to engage with the community

The entry into the community was not an easy task despite my earlier work (during MPH) with the same community. The attempt to make a direct entry into the community was met with an untoward incident that prompted me to get the support of the local healthcare system to gain access. Here, I intend not to blame the community; instead, I would attribute this to my unpreparedness as a female researcher.

I interacted with the Medical Officer of the TB unit and explained my purpose of being there. He smiled on knowing that I wanted to study that community and assured me to offer maximum support from his side. However, he also said that nothing could be changed, and I think his smile symbolized that. I asked him whether

I could talk to patients visiting the unit and he permitted me. I started my work by sitting and observing people at the Tuberculosis Unit (TU). TU, a government healthcare facility, was working in collaboration with various NGOs. Though this TU shared the same compound with the UPHC, one could observe the stark differences between the two offices. While the latter looked well-structured, the former one appeared dilapidated. Though my intention here is to describe my journey of getting into the community, I feel, it would be unfair on my behalf if I don't describe the condition of this TB unit. It was difficult for me to admit that a healthcare facility that was located right at the heart of the city could be in such a terrible condition. It was a single room clinic with two tables, two fans, a roof not cemented, two windows, two cupboards with a microscope kept on the table in one corner of the small room. There was a small washbasin inside for the lab technician. The patients could be observed communicating with the staff through one of the windows, although they were not allowed to go inside. They were observed waiting for the doctor under the tree outside the unit. The unit was originally a part of the Malaria Control Program, which was also utilized for the TB program. I came to know about this when I saw a few containers (part of the activities related to Malaria control), by the side and asked the staff regarding the same. The medical officer appeared frustrated with the system and explained his struggle with the system to get windows and door for a single room TB clinic which he could only get with the support of NGOs working in collaboration with the TB clinic. He pointed towards the debris lying outside the TB unit and described that the two rooms were demolished three years back by the government, speculating that these rooms might collapse. It was told that new rooms would be constructed; however, nothing has been built till today. He brought to fore the discrimination practiced by the staff of the adjacent UPHC since the TB patients and staff of the TB unit, were not allowed to enter UPHC. After this brief conversation, he introduced me to one of the community health workers working with an NGO in alliance with the TU. He suggested me to accompany her for field visits to gain familiarity with the community. I started accompanying her for field visits in the slums of Bholakpur, and she introduced me to the community, including workers.

Initially, the community members were sceptical about my presence, but gradually they started accepting me as somebody representing the healthcare system. Though I was not working on TB, the field visits brought a completely different picture of TB to me. I started listening to the conversations between the CHW and TB patients more carefully, revealing a different appalling reality of TB. Given an opportunity, I would want to work on TB. I feel it is indispensable to consider the following - how the community thinks about TB? what are the challenges TB patients face other than the side-effects caused by medicines? how does the healthcare system see them? What do they think about the ways of limiting/controlling the disease?

I spent almost a month in the community when one fine day, the CHW introduced me to a senior member of the community with extra-pulmonary TB. He looked anxious and had many questions about the disease. We managed to clear his doubts, following which he looked satisfied. He was happy that we spent our 'precious time' talking to him about the various aspects of the disease. He asked me whether I was a doctor. I replied that I want to study the health problems and healthcare-seeking practices of workers working with e-waste. I narrated to him the difficulty which I faced while gaining access, and he assured me of help. However, he suggested not to approach workers directly as they would not respond. He then told me he had friends working with e-waste and so he would introduce me to them. He cautioned me not to ask many questions regarding their business and not to take up more than 10 minutes of their time as they won't entertain beyond that. Through his help, I got access to the workers. The workers asked whether I was working on TB as they had observed me accompanying the CHW in the area. With this, I started the first phase of my research.

By now, I was confident enough to walk alone into the community; however, I felt that I was always under a 'gaze'. I was the only female who could be seen on the streets in the morning and afternoon. One could see the presence of females only in the late afternoon (after 3 PM) as they would go shopping. Though I did dress up differently (shifted to kurta and dupatta) from my usual attire of jeans and t-shirt to appear more familiar to the community, I still looked very different. I think this could be because of how I was carrying myself, the way I walked I talked. The community was not habituated to seeing a 'female without burqa' walking alone on

the streets. I could establish good contact with a few senior members of the community; however, I was always repeatedly questioned about the purpose of my research. They were eager to know whether they would get any benefit out of this research. Initially, I was hesitant about revealing the true purpose of my research due to the fear that workers would not be interested in responding as they considered research as abuse, and they were very vocal about it. Many of them confronted me with the following questions: people like you frequently come to us to get information about us, you waste our time, you will get a good job with a good salary, how is that going to benefit us? However, I felt not revealing my purpose of being there would amount to cheating, so I decided to state it clearly. I informed them that this research was for me to get my degree, and hence they would not get any direct benefit. However, I also mentioned the need to flag their health issues and how the system addresses their needs through my work. Though not everybody agreed to respond, a few were happy knowing that I was there to listen to them. However, they were hesitant when asked to sign the informed consent form. First, they would read the information sheet and informed consent form then; they would ask their nearby friends to read the same. After getting confirmation from their friends, they would sign the form. Sometimes this entire process used to take more than half an hour. A few equated me with someone from the government or media who could threaten their business.

Many a times, I was asked to show my identity card. Though I tried my best to explain to them that I had nothing to do with media neither I was working for the government, they remained skeptical about me. This really puzzled me and made me explore the reason behind their apprehension. I found out that this community has been labelled as ‘pollution creators’ by the media and the government because of an unfortunate cholera outbreak in which fourteen people died. However, the cholera outbreak was because of the damaged pipelines, and these workers were not at fault. To gain their trust, I always kept my phone inside my bag, and I don’t remember taking it out anytime while being on the field. I also told them they could talk to my mentor in case of any doubt.

5.3 My growth as a researcher

I made repeated efforts to be a part of the workers' community, but I could not succeed. I think I was making a futile attempt; I could never become a part of their group. I was always treated as someone superior to them. For instance, they would not allow me to sit on the floor; instead, they would arrange a chair for me and offer coffee to me. I felt a subtle form of power was continually operating – through my educational qualification, dressing, and way of communication. On the other side, I also had to encounter sexist and gendered comments from many. As far as I know myself, I am a very expressive person, and even my colleagues and friends agree with this. But somehow, I felt I got transformed into a different person during my entire data collection period. Despite receiving offending comments, I was quiet and had enough patience to listen to whatever they said. I realized that I was in a brawlwith myself, in the sense that there was a struggle between xxxx, the researcher, and xxxx, the woman. Initially, on directly encountering offensive comments the 'woman' mode got activated. On my way back, as I thought about those comments or while writing down notes, the 'researcher' mode used to be at work. Instead of reacting or I should say 'judging' them and labeling them as 'bad men' I was constantly thinking about the larger context - their location, prevailing patriarchy, poverty, low educational status, occupation - which could have shaped their thought process. However, a couple of times, I landed in problems. I used to get frequent late-night calls and text messages from a few respondents – who were predominantly young males. Though I expressed my discomfort regarding the same, they continued with their calls and messages. Finally, I had to block their numbers. However, I was also worried about the repercussions. Fortunately, I had developed good contacts with a few senior members in the community who assured me that I would get their support and help if I was there. I reported to them about the incidents, and they too suggested blocking the numbers. They asked me not to share my number with anybody there. One of them asked me to give his number if anyone asks my number. I followed this for the later part of my data collection. I was overwhelmed by the amount of trust and care they showed towards me. They also made sure that I should go to correct people who would not trouble me. One of them asked me how many interviews were needed, and I replied that I could not tell the

numbers and explained the reasons. He then contacted a few of his friends and asked me to go there. He also asked his friends to put me in contact with others and asked them to send someone with me. In this way, I could finish in-depth interviews with the workers. Also, because I was doing fieldwork at the peak of summer, they would constantly make me drink cool drinks, which I hate. However, by seeing their concern, I could not deny it. I was a person with a sweet tooth, however, after the first phase of my data collection, I could not have sweets for months, and all the credit goes to the cool drinks I drank for two months.

Though I was there to study the occupational health of e-waste workers, who were primarily males, the prevalence of patriarchy in the community in general firmly caught my attention. The community, in general, believed that women are only meant to reproduce and take care of the family. I was stunned to find that girls in the community are married off at the age of 15-16. This was happening right at the heart of a city proclaimed to be one of the most developed in India. Though there existed a separate school for girls, that most girls did not study beyond 10^{th} standard.

5.4 Moving back and forth with the language

After this, I came back to my institute to put together whatever data I had collected and discuss further course of action. However, I was continuously in touch with the people back to the study site. We used to have a telephonic conversation occasionally. They used to ask me when I would be back in Hyderabad. Meanwhile, at the institute, I was trying to reflect on the theoretical aspect and whether it was informing the data which I had collected. Interestingly, I was able to communicate whatever I did to my doctoral advisory committee members and this time, my 'language' was making much more sense.

5.5 New challenges in the second phase

The second phase of data collection started after six months (in November 2019). This time my entry into the community was smooth as I was quite familiar to them. As I am based in Kerala, I thought of getting few packets of banana chips for my respondents just as a gesture of reciprocity. I also realized that my language had changed!!! I started addressing workers as 'my workers/my respondents' to whoever I was talking to about my study. I returned to Hyderabad in November 2019. I gave workers (only to a few with whom I developed closed contacts) banana chips

packets. They were shocked to receive it as they never expected a girl outside their community to get anything for them. I had to do a survey for which a more significant number of respondents were required, and I expected resistance during the process of informed consent because of my earlier experiences. I again contacted the senior members of the community. They suggested that a young person (25-year-old adult male) from the local community could accompany me as a guide and help me convince workers to be part of the study. To formalize the relationship between the researcher and the guide, I decided to compensate him, and this strategy worked well. Though looked reliable initially, this young person started troubling me later by making frequent audio and video calls. Because he was helping me in reaching the respondents, I could not even block his call. Though I made it clear to him that I was there for research, he wanted to be overfriendly with me, and I was not able to confront him. Again, I sought help from the senior members of the community, and they assured me that they were there for me. I was aware that the young person would not make untoward advances or cross a line. Yet, there was a prevailing discomfort every time I had to walk with him. It is hard to describe that feeling. Somehow, I managed to complete the survey.

5.6 My gender both a facilitatory and a restrictive factor

I could do data collection in this community, which hardly entertain outsiders because of my gender. The prevalent strong patriarchy could have contributed since the protective masculine roles of the senior members ensured my protection and completion of the study. A male may not have received that support. At the same time, a male would not have had to go through the disconcerting circumstances that I went through. It was tough for me to deal with the comments; however, I also appreciate their help and support. They appeared to value my efforts which could be highlighted from the following statements – *"this girl is travelling every day so much, she is away from her family, she is so thin, nobody comes here to ask about us, but she has come".* They appeared worried about my health; they would always try to feed or make me drink something. One of the senior members invited me to his house for lunch. He asked his wife to cook okra for me, which is my favorite. Once during my conversation with him, he asked me what my favorite food is, and I told him chapati and okra. I was overwhelmed by his and his family's hospitality.

5.7 My evolved understanding of the word 'participant' and the subsequent relationship with the community

I also want to confess that we, as researchers, tend to use the terms – participant and respondent - synonymously which I think is not correct. Though I was being exposed to the idea of participatory research for a long time, it was only after reading the book '**Pedagogy of the oppressed**' I could understand the significance of the term 'participant'. I then started reflecting on whether the workers in my study were respondents or participants? I could confidently say that they were respondents throughout my data collection phase; however, this 'researcher-respondent' relationship took a new turn with the onset of the pandemic. After finishing my data collection (16th March 2020), I came back to my institute, and only after a few days, the entire country was put under lockdown. I texted a few of the senior members of the community to know about their whereabouts, in response to which they called me and narrated to me the difficulties the lockdown had posed for them. I think the trust which they had in me made them share their difficulties. When they were struggling for their survival, they were equally worried for me and were constantly asking how I was managing my food and all. This, I feel, goes beyond the researcher-respondent relationship.

To put briefly, I think this whole journey has totally changed me as a researcher in a positive way. I have evolved from an individual with a linear biomedical way of thinking to a researcher who now sees everything from a political economy and social epidemiological lens. I believe that we, as researchers, live in some illusionary world by considering ourselves superior and the community inferior. I think any research in general and with a marginalized community should aim to ensure their equal participation throughout the research process, i.e., research should be done 'with them' instead 'on them'. Their knowledge should be given primary importance. But I am equally aware that this is very difficult in a PhD research given the limited resources and time constrainst. However, I still feel the community could be engaged at various levels if not in the entire process. This, to some extent, eliminates the power dimension between the researcher and the community and brings them on the same floor. I want to incorporate this philosophy in all my future endeavours, if possible.

CHAPTER 6: DISCUSSION

The existing attempts to study occupational health have predominantly been carried out using a biomedical (including psychological) lens, primarily dealing with immediate exposures – physical, chemical, biological, psychological, ergonomics (safety and health at work). This has largely restricted the understanding of occupational health to these exposures for decades while ignoring the structural determinants (social and political). However, a few recent reports have argued the need to look beyond immediate exposures and consider the role of more prominent structural determinants while studying occupational health. The United Nations General Assembly report is a prominent one. The report considers the right to occupational health as an integral component of the right to health. It emphasizes that to achieve the full realization of the right to occupational health as a fundamental component of the right to health, a broad understanding of the relationship between work and health must be adopted. Hence, examining occupational health must include consideration of harmful exposures during work, specific varieties of working conditions, working environment, working relationships, and the social, environmental, and political contexts in which work is situated (United Nations Human Rights Council, 2016). The current study has attempted to explore the immediate occupational health of currently working workers in the unorganized e-waste processing sector in the Bholakpur ward of Hyderabad district by exploring their occupational health problems, healthcare-seeking practices, employment and working conditions and the existing occupational safety and health policies. The results section points out that occupational health problems and healthcare-seeking practices of workers currently engaged in e-waste processing in the unorganized sector are shaped by their socio-demographic characteristics, employment and working conditions and the availability and accessibility of the local healthcare system. These, in turn, appear to be embedded in the institutional arrangements – labour regulatory system and healthcare system. These institutions appear to be guided by the existing policies, which are products of power relations at the macro-level. Based on these findings, I have attempted to situate individual worker in the larger context and, hence, have divided the discussion chapter into the following sections – (a) the developmental context of precarity; (b) contours of precarity in Bholakpur; (c) implications of precarity on health and healthcare seeking; (d)

policies with regards to occupational health with a focus on urban unorganized sector workers who are predominantly self-employed.

6.1 The developmental context of precarity

Workers in Bholakpur reported processing e-waste (among other types of waste) for more than three decades. It is the same place that was earlier recognized for its tanneries. The constant presence of 'dirty' work (occupation) at the same place provokes us to rethink the idea of 'development'. The dominant developmental discourse has assumed the unorganized sector as a phenomenon in transition. It was anticipated that with due course of economic growth and development it would be subsumed by the organized sector (Kannan and Papola, 2007). This philosophy formed the backbone of large-scale industrialization in post-independent India (Sanyal, 2014b). However, the unorganized sector continues to absorb the majority of the workforce in India (International Labour Organization, 2018a) who toil in deplorable conditions for mere survival. This clearly reflects divergence from the dominant model of economic development. One possible way to explain this divergence could be by utilizing the concept of 'wasteland' put forward by Kalyan Sanyal under the ambit of post-colonial capitalist development (Sanyal, 2014c). According to the post-colonial view, capitalism in developing economies has its unique dynamics, characterized primarily by economic heterogeneity marked by the presence of both capitalist (modern) and non-capitalist (traditional) means of production. Under post-colonial capitalism, on the one hand, primitive accumulation leads to the destruction of pre-capitalist sectors. On the other, it also produces a space that necessitates the recreation of those sectors. Space thus created is referred to as a 'wasteland' inhabited by those who are estranged from their means of production and who cannot find a place within the system of capitalist production. It is a space of the dispossessed, marginalised and excluded. These inhabitants are different from the 'reserve army of labour', as conceptualised by Marx, waiting to be subsumed into the capitalist means of production (Sanyal, 2014c). The market-led developmental model – exacerbated more recently by the neoliberal turn – assumed that embracing economic reform would improve the working conditions and socio-economic characteristics of poor and marginalized workers in India (Giri and Singh, 2017). However, in reality, it only served to keep the unorganized 'unorganized', and

Bholakpur is one such example. The narratives from the workers about the history of Bholakpur point towards the same trajectory of wasteland formation. The destruction of traditional work (leather business) caused by neoliberal forces pushed thousands of workers, predominantly at the lower rung of the supply chain, further at the fringe of marginalisation. Though the larger forces appropriated their means of production (leather), the same forces denied their entry into the so-called organised/modern sector, thereby leaving them to fend for themselves. At the same time, the mushrooming of different sectors (information technology and others) in India, again as a result of economic reforms, produced significant growth in the levels of different types of waste, including e-waste (Hodges, 2013).

Andhra Pradesh (AP) was one of the pioneers of economic reform programs in the 1990s. It's then chief minister projected himself as a champion of the reforms and presented the reform policies as a part of a larger development and governance project. It was the first state to negotiate an independent loan from World Bank, the AP Economic Restructuring Programme with information and technology (IT) occupying an important role (Mukherji, 2009). Hyderabad, the capital city then in AP and now in Telangana, emerged as the major IT hub with the government trying to transform Hyderabad city into an engine of growth (Government of Telangana, 2016). While the boom in the IT industry benefited one section of society by ensuring relatively decent and secured jobs, it left others to eke their survival dependent on the enormous amount of e-waste (and other wastes) it generates. Workers of Bholakpur reflect one such section of society who utilized waste for their survival. While processing of e-waste by the unorganized sector is considered illegal, the state appears to turn a blind eye to the legal requirements, thus passively enabling workers to process e-waste for their livelihood. This seems to suggest Sanyal's idea of rehabilitation which is indispensable for capital's existence (Sanyal, 2014c).

E-waste management rules enacted a decade ago (with two subsequent amendments) clearly underscore the need for authorization of the processing units by the state pollution control board (SPCB) (Ministry of Environment and Forests, 2011). However, the ground reality is different which could be reflected from the fact that more than 90% of domestically generated e-waste in India (Awasthi and Li, 2017) and in Telangana ends up in the unorganized sector (Ministry of Environment, Forest

and Climate Change et al., 2017), which is not authorized by the SPCB, or one can say which the SPCB turns a blind eye to. It seems, then, while on the one hand, the state appears blind to the legal aspect of e-waste processing and, hence, letting obtain their mere conditions of existence, it does not want to recognize this work as an 'employment'. This reluctance seems to be a conscious one and could be possibly explained using the concept of 'political society' put forward by Partha Chatterjee. He describes political society as groups of inhabitants categorised as 'populations' and not as 'citizens'. Unlike the concept of citizen, which grants rights to the inhabitants by ensuring their participation in the sovereignty of the state, the idea of the population makes available to government functionaries a set of rationally manipulable instruments for reaching larger section of inhabitants as the targets of their policies (Chatterjee, 2011). A vast section of inhabitants in developing economies like India eke out their livelihood in the unorganized sector, which is largely unregulated and in which production or service units frequently violate labour, tax, and environmental laws. These enterprises, in many cases, include owners who are themselves workers, and it is not unusual for them to value the survival of their units above the making of profits for accumulation. They frequently use collective political mobilization and seek the help of political parties and leaders to ensure conditions for their survival. In dealing with them, the authorities cannot treat them on the same footing as other civic associations, who are supposedly called 'citizens', following more legitimate social pursuits. Yet state agencies and NGOs cannot ignore them either, since they are among thousands of similar associations representing groups of population whose very livelihood or habitation involves violation of the law. Therefore, these agencies deal with these associations not as bodies of citizens but as convenient instruments for the administration of welfare to marginal and underprivileged population groups (Chatterjee, 2011). The unorganised waste processing sector, including e-waste sector in Bholakpur appears to represent another example of a political society where the collectives formed by the workers and a strong contact with local politicians is paving the way for their negotiation with the state. The state, in spite of being aware of the illegality associated with their work, has a public obligation to look after this marginalized community. This obligation arises from the democratic nature of the Indian society as and the

emergence of rights-based organizations both nationally and Internationally. However, recognizing e-waste processing in the unorganized sector as a form of employment would mean that the state is labelling this work as 'legal'. In contrast, it's very own rules on e-waste management make it 'illegal'. Recognizing this as legal would further mean that workers' safety and health should be considered which would necessitate appropriate policies/measures. However, viewing them as a mere population of wasteland and provisioning them with facilities for survival privileges the state not to consider their occupational health needs.

6.2 Contours of precarity in Bholakpur

Workers reported getting e-waste from the bulk consumers (IT companies, educational institutes) and from larger recycling companies. This movement of waste to the unorganized sector clearly breaches what is being prescribed in the e-waste management rules. The non-registration (98%) of e-waste processing units in the context where it is very well known that the majority of e-waste ends up in unorganized sector could be reflective of the way the state is passively enabling these workers engaged in e-waste processing activities under precarious conditions despite the illegality associated with it. Like other types of unorganized sector, employment relationship was either totally absent or fuzzy. The predominance of self-employment (64.8%) further raises a pertinent question on the importance given to the employment relationship while framing labour laws. Even those working as wage labourers did not have any contract, written or oral, with their employers. This again casts doubt on the emphasis of employment relationship to formulate labour laws. The emphasis on employment relationship appears to be shaped by the assumption that there is a clear employment relationship in all occupations including the unorganized sector. However, there is enough evidence that shows that workers in the unorganized sector are predominantly self-employed; even if there is an employment relationship, it is blurred. While it was anticipated that with economic growth and development, the unorganized sector would be subsumed by the organized sector, this assumption belies the empiric reality. The unorganized sector continues to absorb a majority of the workforce in India even after three decades of adoption of economic reforms.

The involvement of young adults (40% of workers aged 24 years or less) and adolescents belonging to the Muslim community, induced by low educational status and financial problems, reflects the deprivation the community is being subjected to for decades. The intergenerational transfer of work, perpetuated by their marginalized status, precluded any form of upward occupational mobility. There is a plethora of literature that details the intergenerational prevalence of precarious work, such as waste processing, among marginalized communities (Rathore, 2020). The developmental model seems to trap the e-waste processing community in Bholakpur in the margins of capital under precarious conditions, not allowing formalization. Further, one needs to see this in the light of rising education level and fall in quality employment in the general population. There have been numerous reports on overqualified people applying for menial jobs, indicating the level of underemployment and unemployment in the country. It is in this context, young less-educated men in Bholakpur could have found processing e-waste as a source of livelihood through their social network and, hence, are trapped in this work.

Workers routine e-waste processing activities consisted of dismantling large items, stripping of wires, and using chemicals, in a cramped room without proper ventilation and lighting. Lack of enough space inside the units compelled them to sit on the roadside. However, a few could always be observed sitting on the roadside as they did not even have the cramped unit to sit and carry on their work. Their everyday struggle in obtaining livelihood could further be understood from the duration of their work in terms of working days/working hours. Though a majority of them reported working six days a week, 14.5% had to work throughout the week. The median number of working hours on a full working day was 9 for a majority; however, interviews revealed that it was not fixed. As a majority of them were locals and had been observing e-waste processing activities since childhood, they denied the need for any formal training to work with e-waste. It could be reflective of the fact that since the community seemed to have ‘constructed’ its own way of obtaining livelihood from e-waste, the meaning they had associated with training appeared to be very different from the one prescribed by the ‘experts’. This could also be because of the way both groups conceptualise e-waste. The larger literature on waste in general and e-waste, in particular, brings to fore the various conceptualisation of

waste, including waste as a hazard, waste as a resource, waste as a commodity, waste as a manageable object, waste as an archive, waste as a filth, waste as a risk, and so on (Moore, 2012). The workers appeared to have conceptualised e-waste as a 'resource' as it provided them livelihood, whereas for experts it appeared as 'hazard'/'risk'. One cannot deny the need for formal training while processing e-waste; it is equally important to consider the meaning of training from the workers' perspective to devise contextually acceptable strategies. Lack of formal training in the processing of e-waste seems to have trapped them in employment relationships based on kinship and other informal understanding rather than formal contracts with rights. In such situation, mainstream hazard control strategies guided by the principles of identification, assessment and elimination and/or control (Rout and Sikdar, 2017), seem irrelevant. Further, the non-recognition of e-waste processing as a type of employment preclude any action from the regulatory institutions, despite the illegality associated with it, and, hence, make these strategies non-operational for this sector.

A majority of them reported processing e-waste without any safety equipment. The prinicipal reason for non-use was their firm belief that safety equipment was not required for this work. This could be indicative of their submissiveness to the precarious conditions. Another reason which refrained them from using any safety equipment was the discomfort caused by it, and hence they avoided using it altogether. This reflects the non-suitability of existing safety equipment for these workers. Though one cannot deny the significance of safety equipment in the context of occupational health, merely asking everyone to wear it without taking into cognizance their work process, the type of material they deal with, the appropriateness of existing safety equipment would not serve any purpose. Also, they were aware of the hazards associated with their work but were left with no choice but to work here.

They could not follow any good ergonomic practices at their workplace or, one could say the phrase 'good ergonomic practices' had no meaning for them; they were only bothered about finishing their work on time irrespective of the posture. Also, expecting them to maintain a first aid kit at their workplace in a situation when they did not even have adequate space to sit appears to be irrelevant. However, workers in

half of the units reported having bandages and antiseptics. But I could hardly observe any of these in the units. Interestingly, workers from one of the units reported having generator oil which they would apply on the injured part. The generator oil is used to lubricate the engine of motor vehicles, which prevents its wear and tear.

The workers' wages were dependent on the type of activities they were engaged in well as on the years of experience they had. Those involved in more risky work, such as using chemicals to extract metals, reported receiving extra money other than their regular wages. Their wages, in the majority of cases, appeared far less than the minimum wages one would get provided the state recognises the work as scheduled employment. Also, there did not exist any concept of paid leave and workers could not demand it because any demand would lead to job loss and, subsequently, livelihood. There was no provision of work-related social security other than employers bearing immediate healthcare expenses in case of any injury resulting in at the workplace. The lack of any organization to represent their needs further rendered them voiceless. The existing welfare societies were focused on the issues of survival and resisting displacement; they had nothing to do with workers' rights or their occupational safety and health issues. Their everyday struggle for sustenance seems to have precluded from thinking from anything regarding occupational safety and health issues, thus putting occupational health again at the back seat.

The above discussion shows how the more critical point of survival displaces all other priorities. This can be said for the demand for occupational health too; the issue is that survival issues dominate and displace the prominence given to occupational health. This resembles to the what Amartya Sen calls 'adaptive preferences'. He elaborates it in the following way – "our mental reactions to what we actually get and what we can sensibly expect to get may frequently involve compromises with a harsh reality. The destitute thrown into beggary, the vulnerable landless labour surviving at the edge of subsistence, the overworked domestic servant working round the clock, the subdues and subjugated housewife reconciled to her role and her fate, all tend to come to terms with their respective predicaments. The deprivations are suppressed and muffled in the case of utilities (reflected by desired fulfilment and happiness) by the necessity of endurance in uneventful survival." People can become so normalized to their conditions of material deprivation and social injustice

that they may claim to be entirely satisfied with their lot (Teschl and Comim, 2005). The workers appeared to become so normalized to the precarious work that it was never an issue for them; their only concern was their bare minimum survival.

There has been a constant effort from the government and the general public (or one can say the relatively better off group) to relocate these workers to the outskirts of the city as they were viewed as 'pollution creators' or 'people engage in illegal work'. The very need of relocating these workers could be explained using the concepts of "bourgeois environmentalism", and the neoliberal transformations of "world-class city", which explain how the urban poor are displaced through environmentalism that privileges aesthetic and class-based concerns have emerged from the neoliberal discourse (Reddy, 2015). Amita Baviskar deployed the concept of 'bourgeois environmentalism' in the context of sweeping program to remake urban space in Delhi. She defines it as – "For the bourgeois environmentalist, the ugliness of production must be removed from the city. Smokestack industries, effluent-producing manufacturing units and other aesthetically unpleasant sites that make the city a place of work for millions should be discreetly tucked away out of sight, polluting some remote rural wasteland. So must workers who labour in these industries be banished out of sight…for the bourgeois environmentalist, urban spaces should be reserved for white-collar production and commerce, and consumption activities" (Reddy, 2015). The phenomena of bourgeois environmentalism does not exist in vacuum, it is driven by the same structural factors that have made these workers struggle for their livelihood in the precarious conditions. The model of world-class cities propagated by neoliberals aims at reshaping urban spaces to fit upper-class aesthetics of the world-city. For instance in Delhi, where thousands are engaged in e-waste processing in unorganized units, the units were relocated to the eastern peripheries of Delhi (Reddy, 2015). The same threat of relocation is looming large on workers processing waste in Bholakpur who contribute to urban sustainability by putting their health at stake. The negative construction of these workers could also be observed from a study conducted by the Environment Protection Training and Research Institute (EPTRI) for the Telangana State Pollution Control Board (TSPCB) to inventories e-waste in Telangana. The study highlighted the presence of many small to medium size e-waste dismantling units in

the state. It stated, “When the EPTRI teams dared and visited these sites with security and protection, it was found that certain musclemen were involved with this type of business operations and their operations were in the interior areas with closed fences. Most of them are managing their businesses, creating fear and horror locally. People are scared to give any information or clues about such unorganized units even though they themselves facing problems with it. The neighbours face these problems but never come forward to break their silence. Performing field survey in such informal sector was involved with risk and serious life threat to the field parties” (Ministry of Environment, Forest and Climate Change et al., 2017). This negative construction could have legitimised the state to not bother about their occupational health. The idea of the social construction of the target population was introduced by Schneider and Ingram. They argued that target groups in public policy are chosen not just for their instrumental ability to serve policy purposes and not just because of their political power but also because of the value-laden, emotional, and powerful positive and negative social constructions with which they are associated. They pointed that that political leaders like to do “good” things for “good” people, and they also like to be “tough” on “bad” people. Hence, the allocation of benefits and burdens to target groups by public policy depends not only on the extent of their political power but also on their positive or negative social construction (Ingram et al., 2007).

6.3 Implications of precarity on health and healthcare-seeking

The existing literature has discussed in detail a range of health problems among workers working in the unorganized solid waste processing sector across the globe predominantly in developing economies. The health problems included infection, mechanical trauma, ergonomic issues and emotional issues (Binion and Gutberlet, 2012).

The precarious nature of the work could have made workers vulnerable to injuries and work-related diseases in Bholakpur. This was also validated by the healthcare providers serving in the slums. Workers categorized their injuries as either 'normal' or 'severe'. They reported getting injured routinely because of the type of work they do and that it is so common that they care about these injuries only when these are "severe". They attributed ‘severity’ to those injuries which required medical care.

However, there were instances when injuries appeared severe to me, but the workers dismissed those by labeling them as 'normal'. This is similar to the findings of a qualitative study conducted in Ghana where workers working with e-waste reported managing minor injuries by themselves, whereas for severe injuries, they preferred consulting healthcare providers (Asampong et al., 2015). This underplay of the severity of the injuries would have resulted in an underestimation of injury prevalence in my survey where 17% had encountered injury at the workplace in the past two weeks preceding the study and 85% had one episode of injury, whereas 41% had encountered injury at the workplace in the past two years and 94% had one episode of injury. The workers could recall both types of injuries encountered in the past two weeks for which either they had to use first aid or had to consult a healthcare provider, whereas whereas they could remember only those injuries encountered in the past two years, which required to consult a healthcare provider. A study conducted in Nigeria among e-waste workers reported a high injury prevalence of 38% and 68% in 1-2 weeks and six months preceding the survey, respectively, among repairers and dismantlers (Ohajinwa et al., 2017). The current study consisted of workers engaged in dismantling, stripping/burning of wires. This definitional difference in study respondents could be one of the reasons for variation in injury prevalence. Another study conducted in Ghana found that 96.2% of workers – collectors, sorters, burners, dismantlers - working with e-waste in the unorganized sector had encountered cuts in six months preceding the study. The study has considered all types of injury irrespective of the severity, which would have contributed to high injury prevalence (Adusei, 2015).

The use of safety equipment plays an indispensable role in ensuring occupational safety, and subsequently, preventing work-related injuries and diseases. However, neither the Nigerian study (Ohajinwa et al., 2017) nor the study conducted in Ghana (Adusei, 2015) nor the current study found any significant statistical association between injuries and use/non-use of safety equipment. Though 31% reported using it sometimes, other than two or three, no worker could be observed using any safety equipment throughout the data collection period in the current study. This could have been one of the reasons for the non-significant association; the other possible reason could be the small sample size. Here, one needs to understand whether workers

really find safety equipment as something which would protect them from injuries. It is important that these injuries must not be extricated from the larger context of precarity. To illustrate this, a statistically significant association was found between hours of work and injury (p-value – 0.01963).

Another health problem reported by the workers, which appeared to relate to their working conditions (ergonomics), was musculoskeletal trouble. They considered body-ache to be 'normal'. In fact, they would feel it only when they go to sleep. The labelling of body-ache as 'normal' could be inkling towards their coping strategy in a situation where they could neither do anything with their working conditions nor could take a day off. Though 45% of them reported having any of the three – neck trouble, shoulder trouble, low back trouble - low back trouble was the commonest (41%) in the past month. The urgency of finishing work on time without bothering about their posture would have resulted in low back trouble. A statistically significant association was found between low back trouble and no. of times bending and lifting heavyweight at the workplace. A study conducted among workers working with e-waste in the unorganized sector in Ghana found a higher prevalence of low back trouble among these workers than a reference group (Acquah et al., 2021). Musculoskeletal trouble has been reported as one of the commonest occupational health problems by almost all the studies, whether done on workers in the organized sector or in the unorganized waste processing sector (Binion and Gutberlet, 2012). However, the frequency and intensity of musculoskeletal trouble could be very different depending on the employment as well as working conditions of the workers which are extremely harsh in many of the unorganized sectors including e-waste processing sector.

The survey findings showed that 13% of workers reported having skin problems in the past one month with itching being the commonest one. This could have been related to their working conditions as they reported getting it at their workplace while working with certain types of e-waste. Though the existing literature details the link between skin problems among workers in the unorganized sector and the type of work they do as well as their unhygienic working conditions, the discourse largely restricts itself to the use/non-use of safety equipment. The importance of safety equipment in preventing the skin problems could not be denied; however, one

needs to go beyond the use/non-use of safety equipment debate and consider the larger issues (discussed earlier). Though the above-mentioned problems appeared to be the predominant ones, the other reported health concerns included eye/s problems in the past one month with watering of eyes (6.5%), breathing difficulty (2%) and stomach related issues with burning sensation (7%) during the past one month preceding the study. A few of them revealed that encountering health problems such as cough, allergy, low back pain in the initial days of their work with e-waste. Though they emphasized on not experiencing health problems anymore, it could be possible that they have started living with it and hence could have stopped bothering about it.

The precarious work in the unorganized e-waste sector not only appears to make workers vulnerable to injuries and work-related diseases but also results in downplaying the seriousness of the same. This could be understood from the following healthcare-seeking practices. The unique practices of multiple TT injections, Hijama, jaggery, and applying coconut oil were observed in response to injuries, musculoskeletal problems particularly low back trouble, breathing difficulties, and itching respectively. Taking the Tetanus toxoid (TT) injection, even as frequently as every two months, was a common form of “treatment” for injuries. Most injections given in developing countries are from, the medical standpoint, unjustifiable or irrational (Reeler, 2000). But studies have contended that certain medically unjustifiable practices, such as the use of injection, need to be understood in the context of the cultural belief systems (Ofori-Adjei and Arhinful, 1996; Reeler, 2000). Depending on the culture, an injection may be perceived as more effective because of its direct entry into the bloodstream (Reeler, 2000). In the current study, workers believed that not taking TT injection in response to injury would result in the spread of infection throughout the body. They take it irrespective of the severity of injury and more because of the type of work they do and belief that taking TT injection will make them "healthy". Further, the healthcare providers seemingly endorsed this demand for TT injection though justifying this practice by arguing that workers may end up getting an infection if it is not given as they work in unhygienic conditions. The literature has also mentioned that the number of injections administered may also be affected by the attitudes of healthcare personnel

themselves (Kermode, 2004). They reason those injections ensure compliance or may express the opinion that they offer the best form of treatment. Another important factor for irrational injection practice was found to be demand among patients. Injection serves as a means of social bonding. Patients feel that a provider who injects is one who cares. If the health care provider knows the patient, then it is very difficult to turn down his or her request for injection (Lakshman and Nichter, 2000; Reeler, 2000). Many of the providers are practicing in and around these slums for a long time, they are very much familiar with the community. This has resulted in a strong worker-provider relationship, and hence they find it difficult to say no to workers when they demand TT injection. Another important factor is the type of healthcare providers in the vicinity. It is being reported that in some settings more non-useful injections have been prescribed and dispense by private providers, informal providers, and traditional healers. Some researchers have explained the quest for injections as a result of accessibility to the health system (Reeler, 2000). Similarly, the practice of Hijama for musculoskeletal trouble appears to be driven by the strong religious as well as cultural belief system. Hijama is widely recognized as cupping therapy and is an ancient traditional and complementary medicine practice. Though it has reported benefits in the treatment of musculoskeletal pain, among others, the mechanism of action remains inconclusive till today. Workers strongly believed the removal of waste blood from the body through Hijama relieved their pain, and hence the solution to their musculoskeletal problems lay in Hijama. This belief was further reinforced by the inscription of this process in their religious text. Workers also resorted to jaggery and coconut oil as preventive and therapeutic solutions for their health problems. These practices may be seen as coping mechanisms, and thus an active choice for the workers in the context of the multiple sources of marginalization and vulnerability they are embedded in, and in fact, throw a light on these contextual factors more than anything else.

As detailed in the result section, workers preferred consulting private, charitable, or informal healthcare providers for their general or occupation related healthcare needs. The Urban Primary Healthcare centers (UPHCs) appeared to fail in recognizing workers healthcare needs as reflected in the functioning timings of UPHCs, which remained operational only in the first half of the day when workers

could not afford to go. Also, the skewed orientation of UPHCs towards maternal and child healthcare (MCH) had made workers feel that UPHCs were only for females and children, thus, further refraining them from utilizing healthcare. Though most of them were enrolled in the state government's health insurance scheme, Rajiv Aarogyasri community health insurance scheme, they could not utilize it. Since 2003, the governments – central and state – have launched various health insurance schemes to extend coverage to workers in the unorganized sector, particularly those who are poor. Rajiv Aarogyasri Community Health Insurance Scheme, launched in 2007 by the Andhra Pradesh government as a public-private partnership (PPP), is one among them. Though it was intended to provide healthcare at the time of critical and catastrophic illness for the poor who live below the poverty line, it is completely biased towards curative care without any provision for outpatient treatment of everyday illnesses which affect the working poor (Reddy and Mary, 2013). Moreover, it is the private sector that has completely captured the insurance provision. The non-recognition of their healthcare needs in general and occupational healthcare needs, in particular, by the public health system could be reflective of the macro-level processes that have eroded the primary care services in the public health system, in general, even for the poor (Gaitonde, 2018). It is in this context; the private and charitable clinics, as well as informal practitioners, are addressing workers' healthcare needs. The neoliberal processes have led to significant changes in the structure of health care services in India since the late 1980s leading to the expansion of the private healthcare sector. The dominant ideology has restructured the underlying philosophy of healthcare from 'service' to 'commodity'. This has resulted in a shift towards the growth of curative services with a strong commercial focus on the neglect of primary health services (Gaitonde, 2018). Public-Private Partnership has become one of the most appropriate models advocated by the state in the health sector. Subsequently, outsourcing diagnostic, sanitary, and other services taking over hospital land for other purposes, non-renewal of land leases to charity hospitals, attempts to hand over primary health centers to private organizations, and so on, were some major reforms that occurred since the 1990s. These measures have been justified by the state as being reform measures to increase the viability of health care services (Prasad, 2018).

6.4 Policies with regards to occupational health with a focus on urban unorganized sector workers

The post-World War II period witnessed the emergence of welfare state with an emphasis on developing and strengthening the public systems, including the health system, and India also followed this. The public health system was envisaged as the critical provider of health care, specifically to poor and marginalized communities. However, the same could not continue to the extent as intended following the adoption of economic reforms, and subsequently, the provision of healthcare largely moved into the hands of the private sector (Gaitonde, 2018). The planners in the past had quite appropriately identified segments of the community who were underprivileged, vulnerable, and at high risk, for special attention which led to the development of health programs for the care of the mother and child and to programs for family planning and immunization. These continue to be dominant programs till today. However, with the erosion of the public health system over time, there emerged inequities even with respect to these programs. On the other side, the same considerations were not given to the provision of health care to the equally important, identifiable, vulnerable, and high-risk sector of the community – the working population (Jeyaratnam, 1992). This neglect remains unchallenged, and one of the reasons for this could be that the occupational safety and health in India comes under the MoLE and not under the MoHFW. However, the provision of healthcare services, by the MoLE, is only for the occupations with a clear employer-employee relationship, and the same was either fuzzy or totally absent in the unorganized e-waste processing units in the slums of Bholakpur. Workers in occupations with clear employment relationship get healthcare services through ESI or through specific welfare boards depending on the type of occupation. For instance, workers in factories can avail services from ESI hospitals (Saha, 2018), whereas workers working in the construction industry can get it from welfare board (Krishnamurthy and Nair, 2003). However, no such provisions exist for workers working in e-waste processing units in Bholakpur. One possible reason for this could be that the discourse surrounding the occupational health views occupational health largely something related to organized form of work or an occupation where one could observe an employment relationship. This clearly emerged from the findings of

policy analysis where workers who are either self-employed or who do not share a clear employment relationship remain excluded from the policies. This could have been shaped by the underlying assumption that with subsequent economic growth and development, the unorganized sector would be subsumed by the organized sector (Kannan and Papola, 2007) and, hence, all workers would be covered by laws/regulations which guide occupational safety and health of workers in the organized sector. However, this assumption belies the empiric reality. While with the subsequent formation of the International Labour Organization and trade unions along with massive labour movements, various laws and regulations were framed to improve the health and well-being of workers in the newly independent India, they were mainly geared to promote economic productivity rather than a true interest in the welfare of workers (Mitchell et al., 2014). For a large majority of workers (predominantly contract and casual workers in the industries), the employers had no welfare responsibilities; they had to depend on their resources. There were no welfare schemes for workers who fell outside the normative employment relationship and, hence, they had to take care of their safety and health (Qadeer and Roy, 1989). A similar trend, or we can say further worsening of conditions of workers, could be observed with the adoption of neoliberal economic policies. India had to comply with the market rules, with 'flexibility of labour' being one among them. This was justified on the ground that a free market is incompatible with unfree labour, and labour laws need to be relaxed to make the labor free. The relaxation of labour laws resulted in further informalization of labour which means though there was acceleration in employment rate, quality of employment got deteriorated (Standing, 2011). This means more and more workers were left to fend for themselves in Neoliberal India. It appears that instead of formalizing the work, the informalization of labour both in the organized and the unorganized sector as rhetoric for enhancing economic productivity has become the new strategy. The notion of flexible work schedules, working at pleasure, working at home are characterized as 'positive' features of the unorganized sector. Though the problems of the unorganized sector are also acknowledged, the solutions suggested further promoting the free-market model of governance in the form of small loans, support by NGOs, and other non-state measures (Srivatsan, 2012).

The subsequent weakening of trade unions (Giri and Singh, 2017) has further contributed to the plight of workers and could have been one of the possible reasons for the non-recognition of self-employed workers in the policy arena. The same rhetoric of a clear employment could be observed in the recent National Health Policy (Ministry of Health and Family Welfare, 2017). The earlier health policies did recognize the unorganized sector and the sub-standard work associated with it; however, the actions reflected the biomedical way of 'disease management' (Ministry of Health and Family Welfare, 2002, 1983).

The exclusion of workers from the policy domains persisted even when many alternative policies to extend the protection to the unorganized sector workers including the self-employed ones, were suggested by different groups such as SEWA, NCEUS at various time-points (National Commission for Enterprises in the Unorganised Sector, 2007). A parallel discourse on the need to address the occupational health of workers with fuzzy or absent employment relationship also emerged at the international level. The report by the United Nations has looked at occupational health through the lens of rights (United Nations Human Rights Council, 2016) and has made an attempt to understand it from the larger development perspective. However, the reality stands very different, and the possible underlying reason for the indifference towards these workers again could be the very assumption that with the economic growth and development, the unorganized sector would be absorbed by the organized sector.

To summarize, the occupational health of currently working individuals in the unorganized e-waste processing sector in the Bholakpur ward of Hyderabad district could be understood at three levels – micro, meso, and macro. The empiric reality in the form of socio-demographic characteristics, employment and working conditions, occupational health problems, and healthcare seeking practices at the micro level appear to be shaped by the existing institutional arrangements – labour regulatory system and healthcare system – at the meso level. These arrangements in turn seem to be shaped by policies which emerge from the interplay of power at the macro-level. The following framework, guided by the findings of Results chapter, could be utilized to further visualized the three levels.

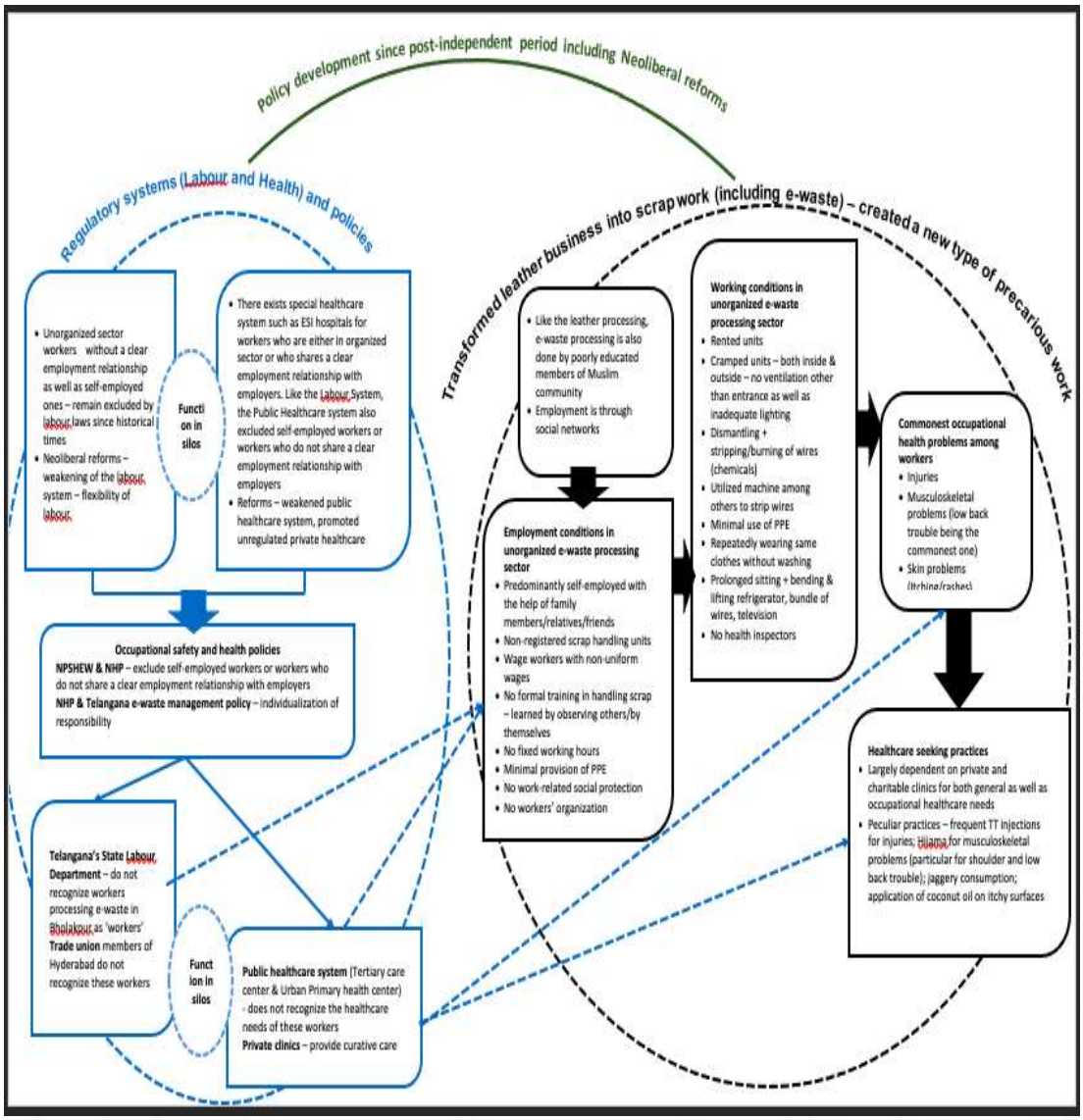

Fig. 6.1: Evolved conceptual framework

6.5 Trustworthiness

To ensure my perspective should not color the interpretation of the data, I tried involving my research team based in Trivandrum - consisting of my supervisor, and doctoral advisory committee members – throughout the research process. Though they were not familiar with the study setting, they possessed extensive research experience in various areas such as occupational health, health equity, health policy, health system, epidemiology. In addition, I was introduced to and go a lot of support from a local NGO who was familiar with the local situation and was working in the area, but not in the field of health. I had engaging discussions with the Director of the NGO, who was trained in social sciences, and had extensive research experience in the area of urban health. The NGO was actively working in Bholakpur on the issues of water and sanitation among other things but not on occupational health. In addition to this, I discussed my research work with a political theorist (based in Hyderabad) who had expertise in the area of development, welfare and healthcare. The purpose behind engaging with all these experts was to take into account their perspectives during the interpretation of the data. This helped me to reflect on my perspective on occupational health. Further, to ensure whether the way I had interpreted the findings made sense to the community, I frequently kept discussing my findings with a few senior members of the community. Their acceptance of interpretation affirmed the trustworthiness of the research process.

CHAPTER 7: CONCLUSION

This study attempted to explore the immediate occupational health of workers currently engaged in e-waste processing in the unorganized sector in the Bholakpur ward of Hyderabad district by exploring their occupational health problems, healthcare seeking practices, employment and working conditions and the existing occupational safety and health policies. The existing studies on occupational health have largely utilized the biomedical lens and, hence, have confined themselves to understanding the immediate exposures and workers' behaviour and their relationship with health problems.

The study findings suggest the consistent presence of precarious work in these slums over decades. It only changed its form – from leather tanning to waste processing (including e-waste). The work has been confined to a particular marginalized community for decades, but it is not recognized as a source of employment by the state. The employment precariousness in the study was reflected both in the employment conditions as well as in the working conditions. The e-waste processing units were not registered under any act. The work was characterized by the predominance of self-employment with the help of family members/relatives/friends, and hence there did not exist a clear employment relationship in the majority of cases. There was no uniformity in the wages; different workers received different wages based on the type of activity they were engaged in as well as based on their experience. Being largely a family-oriented work, and hence intergenerational, workers learned it by observing their family members/friends. There did not exist any concept of fixed working hours. The workers were not provided with any safety equipment, which was justified on the ground that it was not required. The workers did not have work-related social protection, and their voicelessness precluded them from demanding the same. All these could have a bearing on the working conditions. The units were cramped with inadequate space to sit and carry out the work. As a result, it was not possible for them to follow 'good ergonomic' practices. They were processing e-waste with bare hands without using safety equipment in the majority of cases. Both these employment as well as working conditions appear to affect workers health. This could be reflected from the occurrence of repeated injuries, musculoskeletal problems (predominantly low back trouble), and itching/rashes on the exposed part, among others. The precarity associated with their work did not

allow them to take break; they kept working unless the problem became severe. The non-responsiveness of the public healthcare system (UPHCs) further contributed to their plight. They had to rely on private as well as charitable clinics for their healthcare needs.

The study findings suggest that the employment and working conditions are embedded in institutional arrangements, which in turn are shaped by the policies. The policies emerged as a result of power relations at the macro-level. Using the post-positivist lens to policy analysis helped in understanding the way policies have conceptualized occupational safety and health. The policies framed both by the MoLE and the MoHFW lack inclusiveness. While labour policies (OSH) catered to OSH of workers with the employment relationship, health policies could only recognize injuries and restricted to screening, workplace monitoring and awareness creation. This happened despite many alternative proposals being put forward by various groups. This reflects a certain way of thinking which is evident since colonial times, that the unorganized sector is a temporary phenomenon and, hence, with the due course of developing their occupational health would be taken care of by the organized sector.

CHAPTER 8:
LIMITATIONS AND THE WAY FORWARD

LIMITATIONS

- It is widely recognized that a significant proportion of children/adolescents are involved in various e-waste processing activities in the unorganized sector. However, I could not involve them in the present study. I was bound to follow the ICMR guidelines, which state that children are individuals who have not attained the legal age of consent (up to 18 years), and that decision regarding participation and withdrawal of a child in research must be taken by the parent/legal guardian in the best interests of their childhood and hence the consent of the parent/legal guardian is required when research involves children. The anticipation of non-availability of parents/legal guardian at the workplace compelled me to exclude minors from the study.
- I could not interview any of the healthcare providers from UPHCs due to inability to secure permission from the District Medical and Health Officer. The workers were dependent on the private and charitable clinics for their healthcare needs, however, an exploration of healthcare providers' (Medical Officer, ANMs, ASHAs) perception of UPHCs would have added insights regarding the of workers' healthcare needs.
- I limited the scope of my study to the workplace and the healthcare problems which workers could link to their work. I excluded details of family life, living conditions and comorbidities which could have further enriched the understanding of occupational health of these workers.
- I was navigating a community who had a large trust deficit in the system. In the first phase of my data collection I could reach only to those workers who a few senior members in the community (whose trust I could gain after persisting there for a month) recommended. In this process, there is a possibility that I could have missed some important information which would have further enriched my understanding of occupational health of these workers

WAY FORWARD

For the researchers/academicians

- An important area to consider would to be utilize political economy as well as social epidemiology lens while conceptualising occupational health research especially when the occupation is carried out by the marginalized community
- In this study, I have been able to show the systematic neglect of their OSH needs in the policies despite many alternative discourses brewing. It would be important to find out why these alternative discourses failed to become part of policies.
- Another important area to interrogate is the role of the healthcare system and labour system to ensure comprehensive healthcare for these workers, presently these two systems appear to work in silos.

For workers/NGO/civil society

- The workers in certain unorganized sectors such as the construction sector, beedi sector, solid waste processing sector were organized, though through years of struggle. The organization has helped them in demanding OSH needs. It would be interesting to explore whether it would be possible to organize the e-waste workers similarly.

For institutions – healthcare system and labour regulatory system

- Institutions need to acknowledge the existence of the occupational group like this and, hence, should collaborate to ensure their occupational safety and health
- There is a need to work towards regulatory standards to protect the health of workers without compromising their right to livelihood.

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ANNEXURE A: List of publications from the thesis

Sl. No	Authors	Title	Journal	Year	Volume (issue)
1	Mishra S, Maringanti A & Gaitonde R	Coping with precarious work: A case of rampant use of Tetanus Toxoid (TT) injection by the workers in unorganized e-waste sector in the slums of a South Indian city	Journal of Indian Anthropological Society (JIAS)	2021	56(3)
2	Mishra S & Gaitonde R	Challenges of informed consent during a political crisis: A case study of research with a marginalised group	Indian Journal of Medical Ethics (IJME)	2020	VI(3)
3	Mishra S	Perceived and manifested health problems among informal e-waste handlers: A scoping review	Indian Journal of Occupational and Environmental Medicine (IJOME)	2019	23(1)

ANNEXURE B: Curriculum vitae

Name : Sapna Mishra

Email and contact numbers : sapnamishra2510@gmail.com, 9907485708

Institution : Achutha Menon Centre for Health Science Studies (AMCHSS), Sree Chitra Tirunal Institute for Medical Science and Technology (SCTIMST)

Date of Birth : 21/01/1991

Gender : Female

Educational qualification

Sl. No.	Degree	Year	Subject	University	Percentage/CGPA
1	MPH	2014-2016	Public health	University of Hyderabad	9.8
2	BPT	2009-2014	Physiotherapy	Pandit Deendayal Upadhyay Memorial Health Science & Ayush University of Chhattisgarh	69.14

Designation : Senior Research Fellow (UGC-JRF), AMCHSS, SCTIMST

PhD supervisor : Dr. Sankara Sarma P, Professor, AMCHSS, SCTIMST

Title of the study : Exploring occupational health in the context of precarious work: A case study of workers in unorganized e-waste sector in the slums of Bholakpur ward of Hyderabad district

Achievements : University Grants Commission Junior Research Fellowship (UGC-JRF), 2016
Selected for "India Health Policy and Systems Research Fellowships Programme, 2020"

Publications

- **Mishra S,** Maringanti A, Gaitonde R. Coping with precarious work: A case of rampant use of Tetanus Toxoid (TT) injection by the workers in unorganized e-waste sector in the slums of a South Indian city. *Journal of Indian Anthropological Society.* 2021;56(3):309-325.
- Mishra S., Gaitonde R. (2020). Challenges of informed consent during a political crisis: A case study of research with a marginalised group. *Indian J Med Ethics*.. doi:10.20529/IJME. 2020.130.
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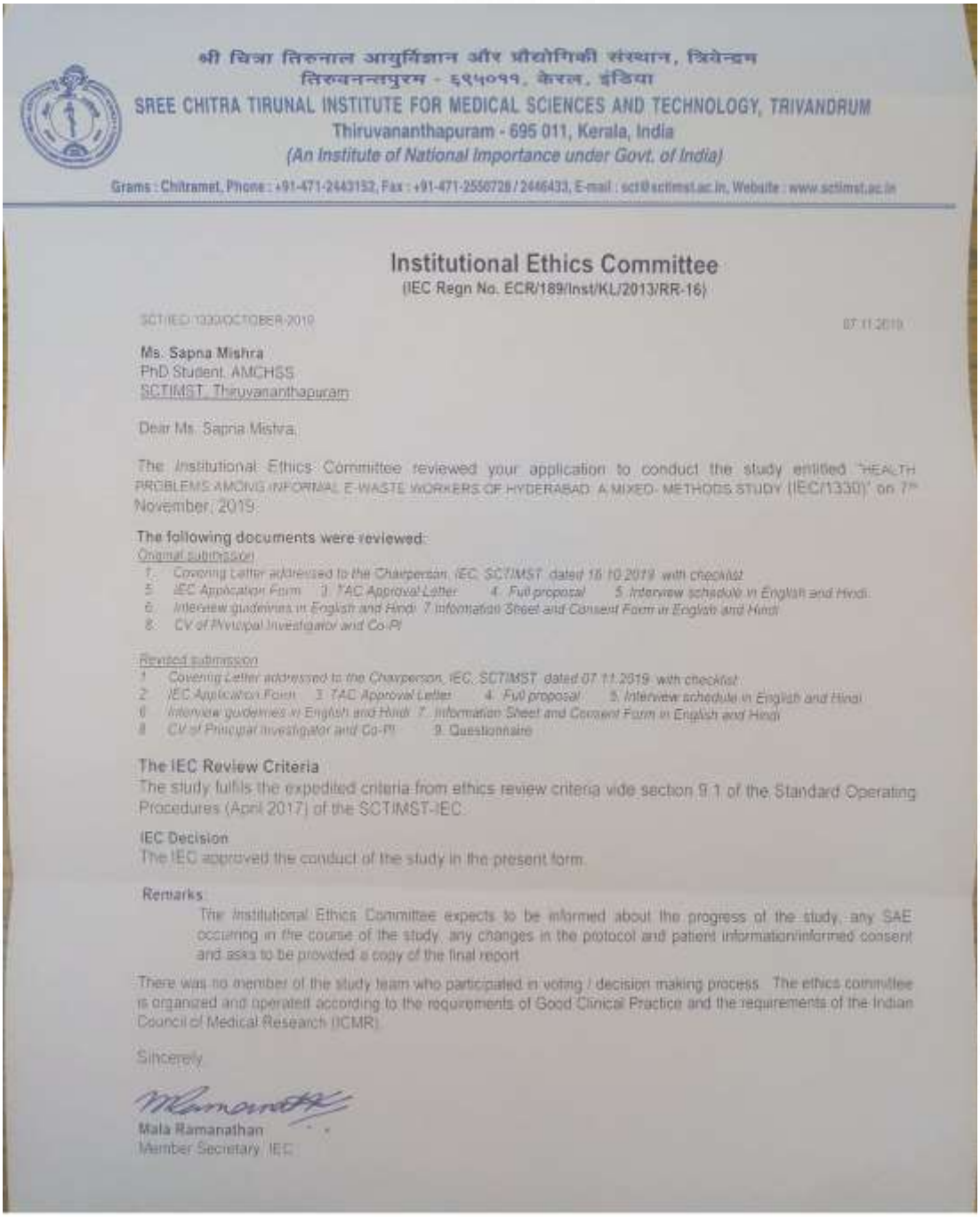
- Mishra S. (2019). Perceived and Manifested Health Problems among Informal E-waste Handlers: A Scoping Review. *Indian journal of occupational and environmental medicine*, *23*(1), 7–14. https://doi.org/10.4103/ijoem.IJOEM_231_18
- Mishra, S., Shamanna, B. R., & Kannan, S. (2017). Exploring the Awareness Regarding E-waste and its Health Hazards among the Informal Handlers in Musheerabad Area of Hyderabad. *Indian journal of occupational and environmental medicine*, *21*(3), 143–148. https://doi.org/10.4103/ijoem.IJOEM_116_17

ANNEXURE C – Appendices

AI. Ethical clearance by the IEC for the study



श्री चित्रा तिरुनाल आयुर्विज्ञान और प्रौद्योगिकी संस्थान, त्रिवेन्द्रम
तिरुवनन्तपुरम - ६९५०११, केरल, इंडिया
SREE CHITRA TIRUNAL INSTITUTE FOR MEDICAL SCIENCES AND TECHNOLOGY, TRIVANDRUM
Thiruvananthapuram - 695 011, Kerala, India
(An Institute of National Importance under Govt. of India)
Grams : Chitramed, Phone : +91-471-2443132, Fax : +91-471-2556728 / 2446433, E-mail : sct@sctimst.ac.in, Website : www.sctimst.ac.in

Institutional Ethics Committee
(IEC Regn No. ECR/189/Inst/KL/2013/RR-16)

SCT/IEC/1330/OCTOBER-2019 07.11.2019

Ms. Sapna Mishra
PhD Student, AMCHSS
SCTIMST, Thiruvananthapuram

Dear Ms. Sapna Mishra,

The Institutional Ethics Committee reviewed your application to conduct the study entitled "HEALTH PROBLEMS AMONG INFORMAL E-WASTE WORKERS OF HYDERABAD: A MIXED- METHODS STUDY (IEC/1330)" on 7th November, 2019.

The following documents were reviewed:

Original submission
1. Covering Letter addressed to the Chairperson, IEC, SCTIMST, dated 16.10.2019, with checklist
2. IEC Application Form 3. TAC Approval Letter 4. Full proposal 5. Interview schedule in English and Hindi
6. Interview guidelines in English and Hindi 7. Information Sheet and Consent Form in English and Hindi
8. CV of Principal Investigator and Co-PI

Revised submission
1. Covering Letter addressed to the Chairperson, IEC, SCTIMST, dated 07.11.2019, with checklist
2. IEC Application Form 3. TAC Approval Letter 4. Full proposal 5. Interview schedule in English and Hindi
6. Interview guidelines in English and Hindi 7. Information Sheet and Consent Form in English and Hindi
8. CV of Principal Investigator and Co-PI 9. Questionnaire

The IEC Review Criteria
The study fulfils the expedited criteria from ethics review criteria vide section 9.1 of the Standard Operating Procedures (April 2017) of the SCTIMST-IEC.

IEC Decision
The IEC approved the conduct of the study in the present form.

Remarks
The Institutional Ethics Committee expects to be informed about the progress of the study, any SAE occurring in the course of the study, any changes in the protocol and patient information/informed consent and asks to be provided a copy of the final report.

There was no member of the study team who participated in voting / decision making process. The ethics committee is organized and operated according to the requirements of Good Clinical Practice and the requirements of the Indian Council of Medical Research (ICMR).

Sincerely,

Mala Ramanathan
Member Secretary, IEC

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AII. Operational definitions for the first phase of the study

	Definitions
Employment & working conditions	These refer to the circumstances at the workplace which may affect workers' health. This could include the following: **Types of employment** **Self-employment:** when there is no employer. The worker/workers herself/himself/themselves handle the business as individually/groups. **Wage employment:** It consists of the presence of an employer and an employee with the provision of facilities (salary, accommodation, any benefits in case of illness) by the employer to the employee **Physical condition of the workplace**: This is constituted by workspace, ventilation, lighting, restroom. **Workspace** - Space available to carry out the work depending on the number of employees. **Ventilation** - Presence of natural and mechanical ventilation **Lightning** - Presence of natural illumination and artificial light sources **Restroom** – Presence of toilet at the workplace **Ways of processing e-waste**: Following methods are utilized to process e-waste: **Segregation** – Those processes involving segregating different types of e-waste **Manual dismantling** – The processes involving use simple tools such as hammer, screwdriver, cutter etc. to break e-waste. **Stripping wire** – Those processes involving stripping/cutting wires/cables **Burning** – Those processes involving burning of wires **Using chemicals** – Those processes involving use of chemicals to extract metals from e-waste

	Job categories: Workers employed under different categories perform the above-mentioned tasks. There may be different workers for different task or single worker doing all the task **Training:** The source/sources from where the workers learn about the methods of processing the e-waste. It could include working as an apprentice in unorganized e-waste sector before getting the job or observing friends/relatives already working in this sector. **First-aid kit:** Assembly of first-aid supplies at the workplace useful for the immediate care of injuries and in the emergency management of pain. These include bandages, pain-medication and antiseptics. **Personal protective equipment:** Those accessories which are meant to protect the workers from injuries and other bodily damage that may arise as a consequence of their work. These include goggles, masks, shoes, gloves while processing the e-waste. **Work-related social security:** Measures ensuring the protection of workers by the employers which could be in the form of employee's compensation or insurance scheme in case of any illness/injury **Workers' Association:** Presence of organization for workers in unorganized e-waste sector which work for the betterment and/or rights of the workers
Workers in unorganized e-waste processing sector	Workers of all gender, who are 18 years and above, involve in the e-waste processing activities at the unorganized sector in the study setting for at-least six months from the start of the study. They could be either self-employed or wage employed.
Occupational health problems/conditions	Health problems/conditions reported by the workers or observed by the me or reported by the healthcare providers. These include but not limited to **Injury**: Physical damage resulting from the

	agent/equipment at workplace. It includes cuts, eye injuries. It could be reported by the worker or by the healthcare provider or observed by me. **Musculoskeletal problem**: Lower or upper back pain reported by the worker or by the healthcare provider **Burn:** Damage to the skin or other body parts caused by burning e-waste or using chemicals to extract metals. **Skin problem**: Irritation or rashes or allergies on forearms, palms, finger, toes, face and neck as reported by the worker or by the healthcare provider or observed by me. **Respiratory problem:** Difficulty in breathing, dry cough, cough with sputum, chest pain as reported by the worker or by the healthcare provider **Mental health problem :** Feeling of anxiety, sadness, frustration, anger, sleeplessness as reported by the worker or by the healthcare provider **Gastro-intestinal problem :** Presence of diarrhoea/vomiting/burning sensation in stomach as reported by the worker by the healthcare provider
Healthcare seeking practices	Actions taken by the worker, who perceive himself/herself to have health problems, is manifested with specific problems, who is currently undergoing any kind of health care intervention for the resolution of any health problem or have been under such treatment in the past six months.

AIII. Informed consent for in-depth interviews with workers

"Exploring occupational health in the context of precarious work: A case study of workers in unorganized e-waste sector in the slums of Bholakpur ward of Hyderabad district"

Achutha Menon Centre for Health Science Studies,
Sree Chitra Tirunal Institute for Medical Sciences & Technology, Trivandrum, Kerala-
695011

Aadab!

I am Sapna Mishra, doing my Doctor of Philosophy (PhD) at Achutha Menon Centre for Health Science Studies, Sree Chitra Tirunal Institute for Medical Sciences & Technology, Trivandrum. My doctoral research looks into occupational health including employment conditions, working conditions, health problems and healthcare seeking practices of workers processing e-waste in the unorganized sector of Hyderabad.

You have been approached for this interview as a member of the workers' community. I am interested in exploring your ideas regarding your employment conditions, working conditions, health problems encountered by you and your health care seeking practices. I also request your permission to examine your forearms, palms, finger, toes, face and neck. These information will help me in exploring the context of occupational health as well as guide me in the development of an interview schedule which is intended to find out the employment conditions, working conditions, health problems and healthcare seeking practices of workers processing e-waste in the unorganized sector of Hyderabad.

Participation in this interview will take about 15-20 minutes of your time. You are free to refuse to participate in the interview at any time during the course of the interview and you are also free to refuse to answer any question at any time. You may not directly benefit from participating in this interview, but the dissemination of the results of the research study may shed more light into the conditions of workers processing e-waste in the unorganized sector at large.

The information provided by you will be kept strictly confidential. Details of this interview will be transcribed and used exclusively for research. Your name, other

personal details and details of your community will not be identified in the transcripts used for analysis. Records and transcripts of the interviews will be kept in safe custody by me (Principal Investigator).

If you agree to participate in the study, please indicate your agreement in the consent statement after reading it carefully. I would also request your permission to record this interview. If you need any more information pertaining to any aspect of the study, please feel free to contact the following people.

Principal Investigator-Sapna Mishra, 9907485708, E-mail:sapnamishra2510@gmail.com

If you have any questions or concerns regarding this study later and would like to talk to someone other than me (the principal investigator), you may contact the Member secretary of the Institutional Ethics Committee of the Sree Chitra Tirunal Institute for Medical Sciences & Technology, Trivandrum. Dr Mala Ramanathan, Phone: 0471-2524234 or email to mala@sctimst.ac.in

Thank you

Consent Statement

I have read out the information in the information sheet. The nature of the study and my involvement has been explained and all my questions have been answered. By signing this consent form, I indicate that I understand what is expected from me and that I am willing to participate in this study. I know that I can withdraw at any time. I have been informed who should be contacted if the need arises.

Interviewer's Name:

Interviewer's signature:

Respondent's Unique Identification Code: Date: Place:

AIV. Semi-structured interview schedule for in-depth interview with workers

Interview ID

Date

Time

1. **Socio-demographic characteristics**

- Could you please let me know your age?
- Could you please let me know what is your highest level of education?
- Have you migrated from somewhere else to this place?
- What was the reason for migration?

2. **Employment and working conditions**

- Could you please let me know whether you known this shop?
- Could you please explain how did you get involved in this occupation?
- Could you please let me know your previous occupation?
- What was the reason for shifting to the current work?
- Could you please explain the nature of your work?
- What types of activities do you do as a part of your work?
- How many days do you work per week?
- How long do you work in a routine working day?

3. **Health problems**

- Could you please let me know when did you fall ill last time?
- What was that illness?
- Do you think that illness could be related to your work?

4 **Health care seeking practices**

- What do you do when you fall ill?
- Could you please explain the types of health care facilities are available near your stay/work?
- Where do you go to take the treatment?
- How far is the health care facility from your stay/work?
- How many times have you visited the health care facility/facilities in the last one month?
- What services do you receive at health care facility?
- Could you please explain whether you have faced any problem while accessing health care?

AV. Observation checklist

Domains	Items to be observed			Field Notes
Types of e-waste	• Computers/laptops • Televisions • Mobile Phones • Air-conditioners • Refrigerator • Washing machines • Cables • Bulbs/tube light/CFL/LED • Others			
Working Conditions	A. Use of equipment	• Hammer • Chisel • Screw-driver • Others		
	B. Work space			
	C. Ventilation			
	D. Lighting			
	E. Safety Measures	a.Personal protective equipment	• Gloves • Goggles • Shoes • Mask • Others	
		b. Availability of first aid		
		c.Others		
	F. Availability of toilet			
	G. Availability of drinking water			
	H. Others			
Workers	A. Posture while working			
	B. Ways of processing e-waste			
	C. Body parts (forearms/palms/fingers/toes/face and neck) for injury/scar/rashes			
	D. Hand washing before having food			
	E. Involvement of adolescents in e-waste processing activities			
	F. Others			
Healthcare facilities	A. Type of healthcare facility			
	B. No. of healthcare facilities located in the vicinity			
	C. Approximate distance of healthcare facility/facilities from e-waste processing units			

AVI. Informed consent for seeking permission from employers to involve their employees in the study

"Exploring occupational health in the context of precarious work: A case study of workers in unorganized e-waste sector in the slums of Bholakpur ward of Hyderabad district"

Achutha Menon Centre for Health Science Studies,
Sree Chitra Tirunal Institute for Medical Sciences & Technology, Trivandrum, Kerala-
695011

Aadab!

I am Sapna Mishra, doing my Doctor of Philosophy (PhD) at Achutha Menon Centre for Health Science Studies, Sree Chitra Tirunal Institute for Medical Sciences & Technology, Trivandrum. My doctoral research looks into occupational health including employment conditions, working conditions, health problems and healthcare seeking practices of workers processing e-waste in the unorganized sector of Hyderabad.

Including your employee in the study will mean that the researcher would ask questions from your employee regarding his/her employment conditions, working conditions, health problems and healthcare seeking practices. It will take 10-15 minutes of his/her time. There is no direct benefits for you or for your employee by participating in this study, but the information collected would shed light on conditions of workers processing e-waste in the unorganized sector at large.

The information collected will be maintained securely by the Principal Investigator and will not be released to anyone in a form that would allow yourself/your employee or the community that you are/were affiliated to be identified. The research findings will be reported only in an aggregate form or in a manner that will not allow individual responses to be identified.

If you agree to your employee participating in the study, please indicate your agreement in the consent statement after reading it carefully. If you need any more information pertaining to any aspect of the study, please feel free to contact the following people. Principal Investigator-Sapna Mishra, 9907485708, E-mail: sapnamishra2510@gmail.com

If you have any questions or concerns regarding this study later and would like to talk to someone other than me (the principal investigator), you may contact the Member secretary of the Institutional Ethics Committee of the Sree Chitra Tirunal Institute for Medical Sciences & Technology, Trivandrum. Dr Mala Ramanathan, Phone: 0471-2524234 or email to mala@sctimst.ac.in

Thank you

Consent form

I, Mr/Ms ----------, employer of ---------- hereby state that I have read the information provided to me regarding the study. I understood that participation of my employee into the study is entirely based on my consent, it is completely voluntary. I realize that I can withdraw my employee's participation from the study any time if I want. I realize that the study will do no harm to my employee and he/she has no direct benefits from taking part in the study. I also understand that the identity of my employee and/her his personal information will be kept confidential.

I voluntarily give permission to include my employee into the study. I have received a copy of the signed information sheet.

Employer's Name:
Employer's signature:

Date: Place:

AVII. Informed consent for in-depth interviews with healthcare providers

"Exploring occupational health in the context of precarious work: A case study of workers in unorganized e-waste sector in the slums of Bholakpur ward of Hyderabad district"

Achutha Menon Centre for Health Science Studies,
Sree Chitra Tirunal Institute for Medical Sciences & Technology, Trivandrum,
Kerala- 695011

Hello!

I am Sapna Mishra, doing my Doctor of Philosophy (PhD) at Achutha Menon Centre for Health Science Studies, Sree Chitra Tirunal Institute for Medical Sciences & Technology, Trivandrum. My doctoral research looks into occupational health including employment conditions, working conditions, health problems and healthcare seeking practices of workers processing e-waste in the unorganized sector of Hyderabad.

You have been approached for this interview as your clinic is located in this area. I am interested in exploring your ideas regarding health problems encountered by the workers and the treatment offered by you. The information obtained will guide me in understanding the role of healthcare system in catering to the occupational healthcare needs as well as in the development of an interview schedule which is intended to find the health problems and healthcare seeking practices among workers processing e-waste.

Participation in this interview will take about 15-20 minutes of your time. You are free to refuse to participate in the interview at any time during the course of the interview and you are also free to refuse to answer any question at any time. You may not directly benefit from participating in this interview, but the dissemination of the results of the research study may shed more light into health problems and healthcare needs of workers processing e-waste in the unorganized sector at large.

The information provided by you will be kept strictly confidential. Details of this interview will be transcribed and used exclusively for research. Your name and other personal details will not be identified in the transcripts used for analysis. Records and

transcripts of the interviews will be kept in safe custody by me (Principal Investigator).

If you agree to participate in the study, please indicate your agreement in the consent statement after reading it carefully. I would also request your permission to record this interview. If you need any more information pertaining to any aspect of the study, please feel free to contact the following people.

Principal Investigator-Sapna Mishra, 9907485708, E-mail:sapnamishra2510@gmail.com

If you have any questions or concerns regarding this study later and would like to talk to someone other than me (the principal investigator), you may contact the Member secretary of the Institutional Ethics Committee of the Sree Chitra Tirunal Institute for Medical Sciences & Technology, Trivandrum. Dr Mala Ramanathan, Phone: 0471-2524234 or email to mala@sctimst.ac.in

Thank you

Consent Statement

I have read out the information in the information sheet. The nature of the study and my involvement has been explained and all my questions have been answered. By signing this consent form, I indicate that I understand what is expected from me and that I am willing to participate in this study. I know that I can withdraw at any time. I have been informed who should be contacted if the need arises.

Interviewer's Name:

Interviewer's signature:

Respondent's Unique Identification Code: Date: Place:

AVIII. Semi-structured interview schedule for in-depth interview with healthcare providers

Interview ID

Date

Time

1. What types of health problems/symptoms do workers processing e-waste in these slums encounter?
2. What are the most common health problems/symptoms among these workers?
3. Could those problems/symptoms be related to e-waste processing activities?

AIX. Informed consent for in-depth interviews with other relevant stakeholders
(Social worker, official from a welfare society)

"Exploring occupational health in the context of precarious work: A case study of workers in unorganized e-waste sector in the slums of Bholakpur ward of Hyderabad district"

Achutha Menon Centre for Health Science Studies,
Sree Chitra Tirunal Institute for Medical Sciences & Technology, Trivandrum,
Kerala- 695011

Aadab!

I am Sapna Mishra, doing my Doctor of Philosophy (PhD) at Achutha Menon Centre for Health Science Studies, Sree Chitra Tirunal Institute for Medical Sciences & Technology, Trivandrum. My doctoral research looks into occupational health including employment conditions, working conditions, health problems and healthcare seeking practices of workers processing e-waste in the unorganized sector of Hyderabad.

You have been approached for this interview as you work closely with workers. I am interested in exploring your ideas regarding workers' employment conditions, working conditions, health problems and your health care seeking practices. The information will help me in exploring the context of occupational health as well as guide me in the development of an interview schedule which is intended to find out the employment conditions, working conditions, health problems and healthcare seeking practices of workers processing e-waste in the unorganized sector of Hyderabad.

Participation in this interview will take about 15-20 minutes of your time. You are free to refuse to participate in the interview at any time during the course of the interview and you are also free to refuse to answer any question at any time. You may not directly benefit from participating in this interview, but the dissemination of the results of the research study may shed more light into the conditions of workers processing e-waste in the unorganized sector at large.

The information provided by you will be kept strictly confidential. Details of this interview will be transcribed and used exclusively for research. Your name and other personal details will not be identified in the transcripts used for analysis. Records and transcripts of the interviews will be kept in safe custody by me (Principal Investigator).

If you agree to participate in the study, please indicate your agreement in the consent statement after reading it carefully. I would also request your permission to record this interview. If you need any more information pertaining to any aspect of the study, please feel free to contact the following people.

Principal Investigator-Sapna Mishra, 9907485708, E-mail:sapnamishra2510@gmail.com

If you have any questions or concerns regarding this study later and would like to talk to someone other than me (the principal investigator), you may contact the Member secretary of the Institutional Ethics Committee of the Sree Chitra Tirunal Institute for Medical Sciences & Technology, Trivandrum. Dr Mala Ramanathan, Phone: 0471-2524234 or email to mala@sctimst.ac.in

Thank you

Consent Statement

I have read out the information in the information sheet. The nature of the study and my involvement has been explained and all my questions have been answered. By signing this consent form, I indicate that I understand what is expected from me and that I am willing to participate in this study. I know that I can withdraw at any time. I have been informed who should be contacted if the need arises.

Interviewer's Name:

Interviewer's signature:

Respondent's Unique Identification Code: Date: Place:

AX. Semi-structured interview schedule for in-depth interview with other relevant stakeholders (Social worker, official from a welfare society)

Interview ID

Date

Time

1. Since how long have you been working in this area?
2. How old is the scrap market over here, do you have any idea?
3. When did this scrap business start growing in this area?
4. What are the sources of e-waste?
5. Is there any welfare society for e-waste workers?
6. Have you ever tried to explore health issues of workers as you have been living in this area since long time?
7. Have you ever thought of conducting health camps for these occupational groups?
8. Could you please let me know whether any license is required to process e-waste?

AXI. Operational definitions for the survey

	Definitions
Migrant	A migrant is defined as a person who moved into Bholakpur either from other districts or other states in the search of employment
Employment & working conditions	These refer to the circumstances at the workplace which may affect workers' health. This could include the following: **Types of employment** **Self-employment:** when there is no employer. The worker/workers herself/himself/themselves handle the business as individually/groups. **Wage employment:** It consists of the presence of an employer and an employee with the provision of facilities (salary, accommodation, any benefits in case of illness) by the employer to the employee **Ways of processing e-waste**: Following methods are utilized to process e-waste: **Segregation** – Those processes involving segregating different types or different components of e-waste **Dismantling** – Breaking of e-waste using simple tools such as hammer, screwdriver, knife etc. **Stripping wire** – Removing plastic/other covering of wires, either manually or mechanically or both to obtain metals such as copper, aluminium. **Burning** – Burning of wires, which cannot be stripped either manually or mechanically, to obtain metals such silver, gold, copper. **Using chemicals** – Use of chemicals such as nitric acid to remove gold and silver coating present in e-waste **Type of equipment used while processing e-waste:** It consists of using tools such as knife, hammer, screwdriver or machine while working with e-waste

Duration of work: This could be divided into three parts:

Number of years of work: Number of years of working with e-waste

Number of days of work per week: Number of working days per week with e-waste

Number of hours of work per day: Number of hours of work per day with e-waste

Training: The source/sources from where the workers learn about the methods of processing the e-waste. It could include working as an apprentice in unorganized e-waste sector before getting the job or observing friends/relatives already working in this sector.

First-aid kit: Assembly of first-aid supplies at the workplace useful for the immediate care of injuries and in the emergency management of pain. These include bandages, pain-medication and antiseptics.

Personal protective equipment: Those accessories which are meant to protect the workers from injuries and other bodily damage that may arise as a consequence of their work. These include goggles, masks, shoes, gloves while processing the e-waste.

Posture while working: It includes the following types of posture maintained by the workers while working with e-waste:

Sitting: Sitting continuously for a long time (3-4 hours) while working with e-waste on an average working day as reported by the worker or observed by me.

Standing: Standing continuously for a long time (2-3 hours) while working with e-waste on an average working day as reported by the worker or observed by me.

Bending & lifting heavy objects at the workplace as reported by the worker or observed by me.

Pushing & pulling heavy object at the workplace as reported by the worker or observed by me.

	<u>Work-related social security</u>: Measures ensuring the protection of workers which could be in the form of employee's compensation or insurance scheme in case of any illness/injury **<u>Committee/Society for the workers</u>:** Presence of any committee/society for workers in unorganized e-waste sector which work for the betterment and/or rights of the workers
Workers in unorganized e-waste processing sector	Workers of all gender, who are 18 years and above, involve in the e-waste processing activities at the unorganized sector in the study setting. They could be either self-employed or wage employed. **Self-employed**: The worker/workers herself/himself/themselves handle the business as individually/groups. **Wage-employed**: The worker/workers receiving wage from his/her/ employer either daily, weekly or monthly
Occupational health problems/conditions	Health problems/conditions reported by the workers or observed by the me. These include but not limited to **<u>Injury</u>**: Physical damage resulting from the agent/equipment at workplace. It includes cut, crush, fracture, prick, pierce. It could be divided into two types: **Minor injury**: It included cut/crush/prick/pierce, in the past two weeks preceding the study, for which doctor consultation was not required as reported by the worker. **Major injury**: It included cut/crush/fracture in the past two weeks preceding the study as well as since the time the worker started working e-waste, for which doctor consultation was required as reported by the worker **<u>Burn:</u>** Damage to the skin or other body parts caused by burning e-waste or using chemicals to extract metals as reported by the worker in the past one year preceding the study. **<u>Musculoskeletal problem</u>:** Trouble (pain, stiffness,

	discomfort) at upper and lower back, shoulder, hip, knee, ankle/foot in the past one month preceding the study, as reported by the worker **Eye/s problem:** It consists of burning, watering, itching of eye(s) as reported by the worker in the past one month preceding the study. **Skin problem:** It consists of itching/rashes on hand/s, whole body in the past one month either reported by the worker or observed by me or both in the past one month preceding the study preceding the study. **Respiratory problem:** It consists of cough, cough with sputum, breathing difficulty, pain in chest as reported by the worker in the past one month and Asthma and Tuberculosis confirmed by the physician in the past one month preceding the study. **Gastro-intestinal problem :** It consists of pain/burning sensation in stomach/abdomen and loose motion as reported by the worker in the past one month preceding the study.
Healthcare seeking practices	Actions taken by the worker on encountering health problem or who is currently undergoing any kind of health care intervention for the resolution of their health problem.

AXII. Revised ethical clearance by the IEC for the survey

श्री चित्रा तिरुनाल आयुर्विज्ञान और प्रौद्योगिकी संस्थान, त्रिवेन्द्रम
तिरुवनन्तपुरम - ६९५०११, केरल, इंडिया
SREE CHITRA TIRUNAL INSTITUTE FOR MEDICAL SCIENCES AND TECHNOLOGY, TRIVANDRUM
Thiruvananthapuram - 695 011, Kerala, India
(An Institute of National Importance under Govt. of India)

Grams : Chitramet, Phone : +91-471-2443152, Fax : +91-471-2550728 / 2446433, E-mail : sct@sctimst.ac.in, Website : www.sctimst.ac.in

Institutional Ethics Committee
(IEC Regn No. ECR/189/Inst/KL/2013/RR-16)

SCT/IEC/1330 /FEBRUARY-2020 — 19.02.2020

Ms. Sapna Misra
PhD Student
AMCHSS
SCTIMST, Thiruvananthapuram

Dear Ms. Sapna Misra,

Thank you for submitting documents related to your proposal titled "HEALTH PROBLEMS AMONG INFORMAL E-WASTE WORKERS OF HYDERABAD: A MIXED-METHODS STUDY (IEC/ 1330)" to the IEC for review.

List of documents:

1. An email request received from Ms. Sapna Misra, PhD Student, dated 31.01.2020
2. Copy of an email request addressed to Dr. Aneesh V Pillai and Dr. Giri Shankar dated 17.01.2020 by the Member Secretary, IEC, SCTIMST
3. Copy of email response received from Dr. Aneesh V Pillai on 18.01.2020
4. Copy of email response received from Dr. Giri Shankar on 04.02.2020
5. Copy of email reply sent to Ms. Sapna Misra on 31.01.2020 by the Member Secretary, IEC, SCTIMST
6. Copy of email request received from Ms. Sapna Misra, PhD Student, dated 05.02.2020

IEC Recommendations

The researcher is permitted to take oral consent given the specific circumstances mentioned. Given that the research includes only survey type research of answering questions (non-invasive), an accompanying study independent person should be asked to witness the oral consent process and sign to indicate that oral consent has been taken.

Sincerely,

Mala Ramanathan
Member Secretary, IEC

AXIII. Informed consent for the survey with workers

"Exploring occupational health in the context of precarious work: A case study of workers in unorganized e-waste sector in the slums of Bholakpur ward of Hyderabad district"

Achutha Menon Centre for Health Science Studies,
Sree Chitra Tirunal Institute for Medical Sciences & Technology, Trivandrum,
Kerala - 695011

Aadab!

I am Sapna Mishra, doing my Doctor of Philosophy (PhD) at Achutha Menon Centre for Health Science Studies, Sree Chitra Tirunal Institute for Medical Sciences & Technology, Trivandrum. My doctoral research looks into occupational health including employment conditions, working conditions, health problems and healthcare seeking practices of workers processing e-waste in the unorganized sector of Hyderabad.

You have been approached for this survey as a member of the workers' community. This survey requires you to respond to few questions regarding your employment conditions, working conditions, health problems and your health care seeking practices. I also request your permission to examine your forearms, palms, finger, toes, face and neck.

Participation in this interview will take about 15-20 minutes of your time. You are free to refuse to participate in the interview at any time during the course of the interview and you are also free to refuse to answer any question at any time. You may not directly benefit from participating in this survey, but the dissemination of the results of the research study may shed more light into the conditions of workers processing e-waste in the unorganized sector at large.

The information provided by you will be kept strictly confidential. Details of this survey will be used exclusively for research. Your name, other personal details and details of your community will not be identified in the data used for analysis. Your data will be kept in safe custody by me (Principal Investigator).

If you agree to participate in the study, please indicate your agreement in the consent statement after reading it carefully. If you need any more information pertaining to any aspect of the study, please feel free to contact the following people.

Principal Investigator-Sapna Mishra, 9907485708, E-mail:sapnamishra2510@gmail.com

If you have any questions or concerns regarding this study later and would like to talk to someone other than me (the principal investigator), you may contact the Member secretary of the Institutional Ethics Committee of the Sree Chitra Tirunal Institute for Medical Sciences & Technology, Trivandrum. Dr Mala Ramanathan, Phone: 0471-2524234 or email to mala@sctimst.ac.in

Thank you

Consent Statement

I have read out the information in the information sheet. The nature of the study and my involvement has been explained and all my questions have been answered. By signing this consent form, I indicate that I understand what is expected from me and that I am willing to participate in this study. I know that I can withdraw at any time. I have been informed who should be contacted if the need arises.

Interviewer's Name:

Interviewer's signature:

Respondent's Unique Identification Code: Date: Place:

AXIV. Structured interview schedule for the survey with workers

Socio-demographic characteristics

1	Name of the participant (optional)	……
2	Age (in completed years)	…….. years
3	Sex	Male ☐ 0
		Female ☐ 1
4	**Educational status**	
4.1	What is your highest level of education?	No formal schooling ☐ 0
		Primary (class 1-class 5) ☐ 1
		Upper primary (class 6-class 8) ☐ 2
		Secondary (class 9-class 10) ☐ 3
		Intermediate (class 11-class 12) ☐ 4
		Degree ☐ 5
4.2	What was the medium of instruction?	Urdu ☐ 0
		Hindi ☐ 1
		English ☐ 2
		Others (specify…..) ☐ 3
5	**Marital status**	
5.1	What is your marital status?	Never married ☐ 0
		Married ☐ 1
		Widow/widower ☐ 2
		Divorced/separated ☐ 3
5.2	Does your spouse also process e-waste?	[No] 0
		[Yes] 1
6	**Migration status**	
6.1	Have you migrated from somewhere else?	[No] 0
		[Yes] 1
6.2	If yes, what was/were the reason(s) for migration?	Search for employment ☐ 0
		Others (specify…….) ☐ 1

Employment & Working conditions

7	What is the area of your shop approximately?		
8	What types of e-waste do you process?	Television	0
		Refrigerator	1
		Washing machine	2
		Air conditioner	3
		computer	4
		Mobile phone	5
		Microwave oven	6
		Charger	7
		Earphone	8
		Electric motor	9
		Wire	10
		Tube-light	11
		Bulb	12
		Others	13
9	How do you process the above mentioned e-waste?	Dismantling	0
		Stripping of wires	1
		Burning wires	2
		Using chemicals (to remove coating)	3
10	How do you carry out stripping of wires?	Manually	0
		Using machine	1
		Both	2
11	What type(s) of equipment do you use while working?	Knife	0
		Hammer	1
		Screw-driver	2
		Machine	3
		Others (specify….)	4

12	Do you own this business?	[No] 0 [Yes] 1
13	**Owner/Employer**	
13.1	How many workers are working under you?	
13.2	Are all workers local?	[No] 0 [Yes] 1
13.3	How many are from other states?	
13.4	Do you need to get your shop registered?	[No] 0 [Yes] 1
13.5	If yes, what type of registration is needed?	
13.6	Is there any requirement to have a license from the government?	
14	**Employee**	
14.1	Since how long you have been working under your present employer?	
14.2	When do you get your salary?	Daily ☐ 0 Weekly ☐ 1 Monthly ☐ 2 Others (specify……) ☐ 3
14.3	Does your employer take care of your accommodation?	[No] 0 [Yes] 1
14.4	Does your employer take care of your food expenses?	[No] 0 [Yes] 1
14.5	Are you able to eat three meals a day (breakfast, lunch and dinner)	
14.5	Does your employer provide you with healthcare expenses in case of any health problems?	[No] 0 [Yes] 1
15	**Duration**	
15.1	How long have you been working with e-waste?	……(months/years)
15.2	Working days	
15.2.1	Number of full working days in a week	…… (days/week)
15.2.2	Number of half working days in a week	…… (days/week)
15.3	Working hours	
15.3.1	On a full working day	……(hours)
15.3.2	On a half working day	……(hours)
16	**Training**	

16.1	Did you get any training for doing this work?	Yes, formal training ☐ 0 No, observed others ☐ 1 No, started by my own ☐ 2 No, worked informally under someone ☐ 3
17	**Personal protective equipment**	
17.1	Have you ever used any personal protective equipment while working?	Yes, I am using it ☐ 0 No, I have never used any ☐ 1 No, started by my own ☐ 2 No, worked informally under someone ☐ 3
17.2	If 0, what type(s) of personal protective equipment do you use while working?	Gloves ☐ 0 Mask ☐ 1 Goggle ☐ 2 Shoes ☐ 3 Others (specify……) ☐ 4
17.3	If 1, what are the reasons for not using personal protective equipment?	Not required ☐ 0 Using them slow down the work ☐ 1 Others (specify…….) ☐ 2
17.4	If 2, what are the reasons for using personal protective equipment sometimes?	
17.5	If 3, why did you stop using personal protective equipment?	
17.6	Has your employer ever provided you with any of the above mentioned personal protective equipment?	[No] 0 [Yes] 1
17.7	If yes, in case of damageis it being replaced by your employer?	[No] 0 [Yes] 1
18	**First-aid kit**	
18.1	Do you have first-aid kit at your shop?	[No] 0 [Yes] 1
18.2	What does first-aid kit consist of?	

		Bandage	☐ 0	
		Antiseptics	☐ 1	
		Pain killers	☐ 2	
		Other	☐ 3	
19	**Committee/society (for employer)**			
19.1	Is there any committee/society for e-waste workers?	[No] 0 [Yes] 1		
19.2	If yes, could you please tell me the name of that committee/society?			
19.3	Are you a member of that committee/society?	[No] 0 [Yes] 1		
19.4	If yes, do you have to pay any membership fee?	[No] 0 [Yes] 1		
19.5	If yes, how much do you have to pay?	…… (rupees)		
20	**Posture**			
20.1	How long do you sit continuously on an average working day?	…….. (hours)		
20.2	How long do you stand continuously on an average working day?	…….. (hours)		
20.3	How many times do you bend and lift heavy objects at your workplace on an average working day?			
20.4	How many times do you push or pull heavy objects at your workplace on an average working day?			

Occupational health problems & Healthcare seeking practices

21	**Injury** **Injury/injuries encountered in the past two weeks**			
21.1	Have you encountered any injury in the past 2 weeks?	[No] 0 [Yes] 1		
21.2	If yes, how many times did you get injured?			
21.3		Injury 1	Injury 2	Injury 3
	Which part(s) of your body injured?			
21.4	Could you please describe the type of injury?			
21.5	What was the reason(s) for			
21.6	What did you do for Left it as it is Washed the injured part with water and left it open Washed the injured part with water			

	and tied a cloth/bandage Washed the injured part with water, applied turmeric and tied a cloth/bandage Consulted a doctor Others (specify……..)				
21.7	On consulting a doctor what treatment did you receive?				
21.8	Did you get hospitalized	[No] 0 [Yes] 1	[No] 0 [Yes] 1	[No] 0 [Yes] 1	
21.9	Which hospital did you get hospitalized?				
21.10	For how long you were hospitalized?				
	Injury/injuries encountered in the past two years				
21.11	Have you encountered any injury in the past two years?				
21.12	If yes, how many times did you get injured?				
21.13	Which part(s) of your body injured?	Injury 1	Injury 2		Injury 3
21.14	Could you please describe the type of injury?				
21.15	What was the reason(s) for				
21.16	What did you do for Left it as it is Washed the injured part with water and left it open Washed the injured part with water and tied a cloth/bandage Washed the injured part with water, applied turmeric and tied a cloth/bandage Consulted a doctor Others (specify……..)				
21.17	On consulting a doctor what treatment did you receive?				
21.18	Did you get hospitalized	[No] 0 [Yes] 1	[No] 0 [Yes] 1	[No] 0 [Yes] 1	
21.19	Which hospital did you get hospitalized?				
21.20	For how long you were hospitalized?				
	Health care seeking practices				
21.21	Where do you seek care in case of injury? (Majority of time)	Government hospital			☐ 0
		Musheerabad Urban primary health center			☐ 1
		Bible House Urban primary health center			☐ 2
		Anjuman clinc			☐ 3
		Dua clinic			☐ 4
		Dr. Shekhar Reddy's hospital			☐ 5
					☐

		Dr. Vikram clinic	6
		Dr. Warris clinic	☐ 7
		Dr. Taiyyab clinic	☐ 8
		Dr. Jaswant clinic	☐ 9
		Others (specify……..)	☐ 10
21.22	If 0, then what was/were the reason(s) for seeking care there?	Serious injury when stiching was required	☐ 0
		When the nearby private and charitable clinics were closed	☐ 1
		Others (specify……..)	☐ 2
21.23	If 3-4, then what was/were the reason(s) for seeking care there?	Convenient to go as doctors were available throughout the day and in evening	☐ 0
		No waiting time	☐ 1
		Doctors listen	☐ 2
		Others (specify……)	☐ 3
21.24	If 5-9, then what was/were the reason(s) for seeking care there?	Convenient to go as doctors were available through – day, evening, night	☐ 0
		No waiting time	☐ 1
		Doctors listen	☐ 2
		They do whatever we ask them to do	☐ 3
		Others (specify……)	☐ 4
	TT injection		
21.25	Have you had TT injection in the past six months?	[No] 0	
		[Yes] 1	
21.26	If yes, how many times did you have?		
21.27	If no, have you heard of TT injection?		
21.28	What is/are the reason(s) for taking TT injection frequently?	Because of the nature of work	☐ 0
		Because of pollution in the area	☐ 1
		Elderly used to tell that taking injection keeps us healthy	☐ 2
		Helps in wound healing	☐ 3

		Prevents spreading of infection throughout the body	☐ 4
		Prevents rotting of hands and feet	☐ 5
		Doctor asks to take it frequently	☐ 6
		Others (specify……)	☐ 7
21.29	Where do you go to take TT injection?		
21.30	Do you have to pay for TT injection?	[No] 0	
		[Yes] 1	
21.31	If yes, how much do you have to pay?		
22	**Breathing problems/symptoms**		
22.1	Have you encountered any respiratory problem(s) in the past one month?	[No] 0	
		[Yes] 1	
22.2	If yes, what were those respiratory problems?	Cough ☐ 0	
		Cough with sputum ☐ 1	
		Breathing difficulty ☐ 2	
		Chest pain ☐ 3	
		Asthma. ☐ 4	
		Tuberculosis ☐ 5	
		Others (specify…….) ☐ 6	
22.3	Where do you seek health care in case of any breathing problems?	Government hospital	☐ 0
		Musheerabad Urban primary health center	☐ 1
		Bible House Urban primary health center	☐ 2
		Anjuman clinc	☐ 3
		Dua clinic	☐ 4
		Dr. Shekhar Reddy's hospital	☐ 5
		Dr. Vikram clinic	☐ 6
		Dr. Warris clinic	☐ 7
		Dr. Taiyyab clinic	☐ 8
		Dr. Jaswant clinic	☐ 9
		Others (specify……..)	☐ 10

23	**Musculoskeletal trouble**		
	Neck		
23.1	Have you at any time during the last one month had trouble (pain, stiffness, discomfort) in the neck?	[No] 0 [Yes] 1	
23.2	If yes, did/is this interfere/interfering with your ability to work?	[No] 0 [Yes] 1	
23.3	If yes, which aspect of your work got/is getting affected?		
23.4	Have you been seen by a doctor because of neck trouble?	[No] 0 [Yes] 1	
23.5	Which doctor did you see?		
23.6	Have you had neck trouble at any time during the last seven days?	[No] 0 [Yes] 1	
	Shoulder(s)		
23.7	Have you at any time during the last one month had trouble (pain, stiffness, discomfort) in shoulders?	[No] 0 [Yes] 1	If yes, In right shoulder ☐ 0 In left shoulder ☐ 1 Both ☐ 2
23.8	If yes, did/is this interfere/interfering with your ability to work?	[No] 0 [Yes] 1	
23.9	If yes, which aspect of your work got/is getting affected?		
23.10	Have you been seen by a doctor because of shoulder trouble?	[No] 0 [Yes] 1	
23.11	Which doctor did you see?		
23.12	Have you had shoulder trouble at any time during the last seven days?	[No] 0 [Yes] 1	
	Lower back		
23.13	Have you at any time during the last one month had trouble (pain, stiffness, discomfort) in lower back?	[No] 0 [Yes] 1	
23.14	If yes, did/is this interfere/interfering with your ability to work?	[No] 0 [Yes] 1	
23.15	If yes, which aspect of your work got/is getting affected?		
23.16	Have you been seen by a doctor because of low back trouble?		
23.17	Which doctor did you see?		
23.18	Have you had lower back trouble at any time during the last seven days?	[No] 0 [Yes] 1	

	Hip(s)			
23.19	Have you at any time during the last one month had trouble (pain, stiffness, discomfort) in hips?	[No] 0 [Yes] 1	If yes, In right hip In left hip Both	 ☐ 0 ☐ 1 ☐ 2
23.20	If yes, did/is this interfere/interfering with your ability to work?	[No] 0 [Yes] 1		
23.21	Have you been seen by a doctor because of hip(s) trouble?			
23.22	Which doctor did you see?			
	Knee(s)			
23.23	Have you at any time during the last one month had trouble (pain, stiffness, discomfort) in knees?	[No] 0 [Yes] 1	If yes, In right knee In left knee Both	 ☐ 0 ☐ 1 ☐ 2
	Ankle(s)/feet			
23.24	Have you at any time during the last one month had trouble (pain, stiffness, discomfort) in ankles/feet?	[No] 0 [Yes] 1	If yes, In right shoulder In left ankle/foot Both	 ☐ 0 ☐ 1 ☐ 2
24	**Burn**			
24.1	Have you encountered any burn injury in the past one year while working?	[No] 0 [Yes] 1		
24.2	If yes, how many times did you get burned?			
24.3	Which part(s) of your body got burned?			
24.4	Where do you seek health care in case of any of any burn injury?	Government hospital Musheerabad Urban primary health center Bible House Urban primary health center Anjuman clinc Dua clinic Dr. Shekhar Reddy's hospital Dr. Vikram clinic Dr. Warris clinic Dr. Taiyyab clinic Dr. Jaswant clinic Others		☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

		(specify……..)	
25	**Eye problem(s)**		
25.1	Have you encountered any eye problem(s) in the past one month?	[No] 0	
		[Yes] 1	
25.2	If yes, what type of eye problem(s) you have encountered in the past one month?	Burning ☐ 0	
		Itching ☐ 1	
		Watering ☐ 2	
		Others (specify……..) ☐ 3	
25.3	Where do you seek health care in case of any of the above-mentioned eye problem(s)?	Government hospital	☐ 0
		Musheerabad Urban primary health center	☐ 1
		Bible House Urban primary health center	☐ 2
		Anjuman clinc	☐ 3
		Dua clinic	☐ 4
		Dr. Shekhar Reddy's hospital	☐ 5
		Dr. Vikram clinic	☐ 6
		Dr. Warris clinic	☐ 7
		Dr. Taiyyab clinic	☐ 8
		Dr. Jaswant clinic	☐ 9
		Others (specify……..)	☐ 10
26	**Skin problem(s)**		
26.1	Have you encounter any skin problem(s) in the past one months?	[No] 0	
		[Yes] 1	
26.2	If yes, what kind of skin problem(s) have you encountered in the past one month?	Itching ☐ 0	
		Rashes ☐ 1	
		Others (specify……) ☐ 2	
26.3	Which part(s) of your body has/have skin problem(s) in the past one month?		
26.4	Where do you seek health care in case of any of the above-mentioned skin problem?	Government hospital	☐ 0
		Musheerabad Urban primary health center	☐ 1
		Bible House Urban primary health center	☐ 2
		Anjuman clinc	☐ 3
		Dua clinic	☐ 4

		Dr. Shekhar Reddy's hospital	☐ 5
		Dr. Vikram clinic	☐ 6
		Dr. Warris clinic	☐ 7
		Dr. Taiyyab clinic	☐ 8
		Dr. Jaswant clinic	☐ 9
		Others (specify……..)	☐ 10
27	**Gastrointestinal problem(s)**		
27.1	Have you encountered any gastrointestinal problem(s) in the past one month?	[No] 0 [Yes] 1	
27.2	If yes, what type(s) of gastrointestinal problem(s) have you encountered in the past one month?	Pain in abdomen ☐ 0 Burning sensation in abdomen ☐ 1 Loose motion ☐ 2 Others (specify…….) ☐ 3	
27.3	Where do you seek health care in case of any of the above-mentioned gastrointestinal problem?	Government hospital	☐ 0
		Musheerabad Urban primary health center	☐ 1
		Bible House Urban primary health center	☐ 2
		Anjuman clinc	☐ 3
		Dua clinic	☐ 4
		Dr. Shekhar Reddy's hospital	☐ 5
		Dr. Vikram clinic	☐ 6
		Dr. Warris clinic	☐ 7
		Dr. Taiyyab clinic	☐ 8
		Dr. Jaswant clinic	☐ 9
		Others (specify……..)	☐ 10
28	**Health camps**		
28.1	Have you heard of health camps?	[No] 0 [Yes] 1	
28.2	Do you have health camps in your area?	[No] 0 [Yes] 1	
28.3	If yes, who conducts health camps?		

28.4	How many health camps have been conducted in the past six months?		
28.5	Do you attend health camps?	[No] 0	
		[Yes] 1	
28.6	If yes, when did you attend it last time?		
28.7	What was the reason for attending it?		
28.8	If no, what are the reasons for not attending health camps?	Health camps are for elderly people	☐ 0
		Why to go when nothing happens	☐ 1
		Overcrowding as it is free	☐ 2
		Not convenient as they happen during daytime	☐ 3
		Doctors do not treat properly	☐ 4
		Mostly by doctors from private hospitals who write something without examining properly and ask to come to their hospital	☐ 5
		Do not trust doctors	☐ 6
		Others (specify……)	☐ 7

AXV. Informed consent for seeking permission from employers to involve their employees in the survey

"Exploring occupational health in the context of precarious work: A case study of workers in unorganized e-waste sector in the slums of Bholakpur ward of Hyderabad district"

Achutha Menon Centre for Health Science Studies,
Sree Chitra Tirunal Institute for Medical Sciences & Technology, Trivandrum,
Kerala-695011

Aadab!

I am Sapna Mishra, doing my Doctor of Philosophy (PhD) at Achutha Menon Centre for Health Science Studies, Sree Chitra Tirunal Institute for Medical Sciences & Technology, Trivandrum. My doctoral research looks into occupational health including employment conditions, working conditions, health problems and healthcare seeking practices of workers processing e-waste in the unorganized sector of Hyderabad.

Including your employee in the survey will mean that the researcher would ask questions from your employee regarding his/her employment conditions, working conditions, health problems and healthcare seeking practices. It will take 10-15 minutes of his/her time. There is no direct benefits for you or for your employee by participating in this study, but the information collected would shed light on conditions of workers processing e-waste in the unorganized sector at large.

The information collected will be maintained securely by the Principal Investigator and will not be released to anyone in a form that would allow yourself/your employee or the community that you are/were affiliated to be identified. The research findings will be reported only in an aggregate form or in a manner that will not allow individual responses to be identified.

If you agree to your employee participating in the study, please indicate your agreement in the consent statement after reading it carefully. If you need any more information pertaining to any aspect of the study, please feel free to contact the following people. Principal Investigator-Sapna Mishra, 9907485708, E-mail: sapnamishra2510@gmail.com

If you have any questions or concerns regarding this study later and would like to talk to someone other than me (the principal investigator), you may contact the Member secretary of the Institutional Ethics Committee of the Sree Chitra Tirunal Institute for Medical Sciences & Technology, Trivandrum. Dr Mala Ramanathan, Phone: 0471-2524234 or email to mala@sctimst.ac.in

Thank you

Consent form

I, Mr/Ms ----------, employer of ---------- hereby state that I have read the information provided to me regarding the study. I understood that participation of my employee into the study is entirely based on my consent, it is completely voluntary. I realize that I can withdraw my employee's participation from the study any time if I want. I realize that the study will do no harm to my employee and he/she has no direct benefits from taking part in the study. I also understand that the identity of my employee and/her his personal information will be kept confidential.

I voluntarily give permission to include my employee into the study. I have received a copy of the signed information sheet.

Employer's Name:
Employer's signature:

Date: Place:

AXVI. Informed consent for in-depth interviews with other relevant stakeholders
(For policy analysis)

"Exploring occupational health in the context of precarious work: A case study of workers in unorganized e-waste sector in the slums of Bholakpur ward of Hyderabad district"

Achutha Menon Centre for Health Science Studies,
Sree Chitra Tirunal Institute for Medical Sciences & Technology, Trivandrum,
Kerala-695011

Aadab!

I am Sapna Mishra, doing my Doctor of Philosophy (PhD) at Achutha Menon Centre for Health Science Studies, Sree Chitra Tirunal Institute for Medical Sciences & Technology, Trivandrum. My doctoral research looks into occupational health including employment conditions, working conditions, health problems and healthcare seeking practices of workers processing e-waste in the unorganized sector of Hyderabad.

You have been approached for this interview as you work closely with workers. I am interested in exploring your ideas regarding existing policies on occupational safety and health of workers in the unorganized sector. The information will help me in exploring how existing policies address the occupational safety and health of workers working in the unorganized sector in general and e-waste processing sector in particular.

Participation in this interview will take about 15-20 minutes of your time. You are free to refuse to participate in the interview at any time during the course of the interview and you are also free to refuse to answer any question at any time. You may not directly benefit from participating in this interview, but the dissemination of the results of the research study may shed more light into the conditions of workers processing e-waste in the unorganized sector at large.

The information provided by you will be kept strictly confidential. Details of this interview will be transcribed and used exclusively for research. Your name and other personal details will not be identified in the transcripts used for analysis. Records and

transcripts of the interviews will be kept in safe custody by me (Principal Investigator).

If you agree to participate in the study, please indicate your agreement in the consent statement after reading it carefully. I would also request your permission to record this interview. If you need any more information pertaining to any aspect of the study, please feel free to contact the following people.

Principal Investigator-Sapna Mishra, 9907485708, E-mail:sapnamishra2510@gmail.com

If you have any questions or concerns regarding this study later and would like to talk to someone other than me (the principal investigator), you may contact the Member secretary of the Institutional Ethics Committee of the Sree Chitra Tirunal Institute for Medical Sciences & Technology, Trivandrum. Dr Mala Ramanathan, Phone: 0471-2524234 or email to mala@sctimst.ac.in

Thank you

Consent Statement

I have read out the information in the information sheet. The nature of the study and my involvement has been explained and all my questions have been answered. By signing this consent form, I indicate that I understand what is expected from me and that I am willing to participate in this study. I know that I can withdraw at any time. I have been informed who should be contacted if the need arises.

Interviewer's Name:

Interviewer's signature:

Respondent's Unique Identification Code: Date: Place:

AXVII. Semi-structured interview schedule for in-depth interview with Trade Union Members (Policy Analysis)

Interview ID

Date

Time

1. Since how long have you been working with this Trade Union?
2. What types of unorganized sector workers do you work with?
3. What is your input on the working conditions of unorganized sector workers?
4. Does labor dept. conduct inspection in unorganized sectors?
5. Do these units (e-waste) fall under any act?
6. what are the criteria to get into ESI?
7. To avail ESI facilities is it necessary for the workplace to get registered under labor department?
8. what are the criteria to get social security card?

AXVIII. Semi-structured interview schedule for in-depth interview with healthcare system officials (Policy Analysis)

Interview ID

Date

Time

1. Are there any specific policies/schemes to take care of the health care needs of unorganized sector works?
2. Whether unorganized sector workers could also avail ESI facilities?

AXIX. Semi-structured interview schedule for in-depth interview with an official from the state Labour department (Policy Analysis)

Interview ID

Date

Time

1. What are the policies/schemes available to address the occupational safety and health of unorganized sector workers in India?
2. What is the role of labor department in ensuring occupational safety and health of unorganized sector work in general and workers processing e-waste in particular?

AXX. Semi-structured interview schedule for in-depth interview with an occupational health specialist (Policy analysis)

Interview ID

Date

Time

1. Could you please throw some light regarding the occupational safety and health of workers in the unorganized sector?
2. How did the National Policy on Safety, Health and Environment at workplace came into being? What are its implications for the unorganized sector workers?

AXXI. Semi-structured interview schedule for in-depth interview with an official from an NGO working with workers processing waste (Policy analysis)

Interview ID

Date

Time

1. We have noticed that the first set of rules for e-waste management was framed in 2011 with subsequent amendments in 2016 and 2018. Could you please explain us the relevance of these rules for unorganised e-waste sector ?
2. Who all were involved in framing these rules?
3. We have also found that the state labour department has been added as a stakeholder following the first amendment (2016 rules). Could you please share your insights regarding to what extent are the roles (mentioned in 2016 rules) of the state labour department relevant for workers in the unorganised e-waste sector?
4. Whether these were in anyway influenced by the NCEUS process or the laws / policy that came as a result?

AXXII. Semi-structured interview schedule for e-mail conversation with DGFASLI (Policy analysis)

Date

Time

1. We are attempting to analyse the National Policy on Safety, Health, and Environment at the workplace (NPSHEW). Also, we are trying to find out the reasons behind the formulation of this policy. Could you please throw some light regarding?
2. We came across a bill proposed by the National Commission for Enterprises in Unorganised Sector (NCEUS) in 2007 on conditions of work for non-agricultural unorganized workers. So, we are trying to understand what is the link between, if at all, between the bill proposed by NCEUS and NPSHEW. It would be of great help if you could let us know whether there exists any link between these two (proposed bill, 2007 & NPSHEW).

AXXIII. Informed consent for in-depth interviews with workers (Urdu)

حیدراباد کےالیکٹرکی کچرے کے غیر سرکاری کام کرنے والوں میں صحت کے مسائل

اچوتا منوں ہیلتھ سائنس اسٹڈیز

سری چترا ترونل انسٹیٹیوٹ فر میڈیکل سائنسز اینڈ ٹیکنولوگی تریواندرم

شرکاء کے تفصیلات کا پرچا

میں سپنا مشرا اچھوتا منوں ہیلتھ سائنس اسٹڈیز سری چترا ترونل انسٹیٹیوٹ فر میڈیکل سائنسز اینڈ ٹیکنولوگی تریواندرم میں ڈاکٹر اف فلسفے کر رہی ہوں میری تحقیق حیدراباد کے الیکٹرکی کچرے کے کامکرنے والوں میں صحت کے مسائل کام کرنے کے حالات صحت کی دکھبھال کے رویے اور طریقے
آپ کرکونوں کی گروہ میں ہونے کی وجہ سےآپ سے انٹرویو کے لئے رابطہ کیا جارہا ہے میں اپکے کام کے بلات اور آپ کو ہونے والے صحت کے مسائل اور صحت کی دکھبھال کے مطلق آپ کا روّیہ جاننے میں دلچابی رکھتی ہوں میں آپ سے گزارش کرتی ہوں کی آپ مجھے اپنی ہتھیلی انگلیوں چہرا گردن اور گلے کی جانچ کرنے کے لئے اجازت دیں یہ ملامت مجھے اگلے سوالوں کا پرچ بنانے میں مدد کرینگے جو ان غیر سرکاری کارکنوں کے صحت کے مسائل کی وسعت اور معالج کا استعمال غیر سرکاری الیکٹرکی کچرے کے کارکن میں
اس ملاقات میں حصّہ لینے کے آپ کے ۱۵ سے ۳۰ منت لگینگے آپ انٹرویو میں حصّہ لینے کے لئے یا اس دوران کبھی بھی مانا کرسکتے ہیں آپ کسی سوال کا جواب دینے سے انکار بھی کرسکتے ہیں آپ کو اس کا براہ راست فایدہ نہ ہو اسکا لیکن یہ تحقیق کے نتائج الیکٹرکی کچرے میں کام کرنے والے کارکنوں کی حالت پر مزید روشنی ڈالینگے
آپ کے دے گئے معلومات کی پاسبانی کی جاےگی اس ملاقات کے تفصیل تحقیق کے لئے استعمال کے جاینگے آپ کا نام انفرادی جانکاری آپ کے طبقے کی تفصیل تجزیے میں نہیں استعمال ہونگے انٹرویو کی رکاڈنگ اور تحریر میری سربراہ تحقیقکار کی نگاہ دستی میں رہینگے
اگر آپ مثلبے میں حصّہ لینے کے لئے رازی ہن تو بری مہربانی رضامندی کے بیان کو غور سے پڑنر کے بعد پھر اس میں اپنی رضامندی ظاہرکریں میں آپس اس ملاقات کوریکارڈ کرنے کی اجازت چہونگی اگر آپ کو اس مثلبے کے کسی بھی موضوع یا کوئی اور جانکاری چاہئے ہو تو بلا جھجھک ان لوگوں سے رابطہ کریں سربراہ تفیقکر E-mail:sapnamishra2510@gmail.comسپنا مشرا 9907485708
اگر آپ کو باد میے اس بارے میں کوئی سوال یا خدشات ہوں اور آپ میرے علاوہ کسی اور سے بات کرنا چاہتےہیں تو آپ سری چترا ترونل انسٹیٹیوٹ فر میڈیکل سائنسز اینڈ ٹیکنولوگی تریواندرم کے انسٹتتل ایتھکس کامتے کے سیکرٹری ڈاکٹر ملا رمناتھن سے ربتہ کرسکتے ہیں 04712524234 mala@sctimst.ac.inاور میل کرسکت ہیں

شکریہ

رضامندی کا بیان

میں نے معلوماتی پرچے کو پڑھا اس مثلیے کی نوعیت اور میری شمولیت واضح کی گئی ہے اور میرے سارے سوالوں کے جواب دے جا چکے ہیں میں اس رضامندی کے پرچے پی دستخط کرکے یہ ظاہر کرتا ہوں کی می سمجھتا ہوں کی مجھ سے کیا توقعو ہے اور یہ کی می اس مثلیے کا حصّہ بننے کے لئے می جانتا ہوں کے میں کسی بھی وقت دستبردار ہوسکتا ہوں یا اسے کھود سکتا ہوں ضرورت پڑنے پر کس سے رابطہ کرنا ہے یہ مجھے بتایا گیا ہے

جی ہاں میں انٹویو/ملاقات کے لئے راضی ہوں

دستخط _____

یا

(اگر مدعا دستخط کرنے کے لئے تیّر نہ ہو (زبانو رضامندی

گواہ کی دستخط _____

گواہ کا نام اور پتا _____

_____

اگر آپ شامل نہیں ہونا چاہتے ہیں تو آپ کے وقت کا شکریہ

مدعا کا نام _____

مدعا کا پتا _____

_____

انٹرویو لینے والوں کا نام

_____

انٹرویو لینے والوں کے دستخط _____

(unique identification code)مدعا کا منفرد پہچان کوڈ : _____ تاریخ _____ پتا

AXXIV. Informed consent for the survey with workers

حیدراباد کےالیکٹرکی کچرے کے غیر سرکاری کام کرنے والوں میں صحت کے مسائل

اچوتا منوں ہیلتھ سائنس اسٹڈیز

سری چترا ترونل انسٹیٹیوٹ فر میڈیکل سائنسز اینڈ ٹیکنولوگی تریواندرم

شرکاء کے تفصیلات کا پرچا

میں سپنا مشرا اچھوتا منوں ہیلتھ سائنس اسٹڈیز سری چترا ترونل انسٹیٹیوٹ فر میڈیکل سائنسز اینڈ ٹیکنولوگی تریواندرم میں ڈاکٹر اف فلسفے کر رہی ہوں میری تحقیق حیدراباد کے الیکٹرکی کچرے کے کامکرنے والوں میں صحت کے مسائل کام کرنے کے حالات صحت کی دکھبھال کے رویے اور طریقے
آپ کرکونوں کی گروہ میں ہونے کی وجہ سےآپ سے انٹرویو کے لئے رابطہ کیا جارہا ہے میں آپکے کام کے بلات اور آپ کو ہونے والے صحت کے مسائل اور صحت کی دکھبھال کے مطلق آپ کا روّیہ جاننے میں دلچاپی رکھتی ہوں میں آپ سے گزارش کرتی ہوں کی آپ مجھے اپنی ہتھیلی انگلیوں چہرا گردن اور گلے کی جانچہ کرنے کے لئے اجازت دیں یہ ملامت مجھے اگلے سوالوں کا پرچ بنانے میں مدد کرینگے جو ان غیر سرکاری کارکنوں کے صحت کے مسائل کی وسعت اور معالج کا استعمال غیر سرکاری الیکٹرکی کچرے کے کارکن میں
اس ملاقات میں حصّہ لینے کے آپ کے ۱۵ سے ۳۰ منت لگینگے آپ انٹرویو میں حصّہ لینے کے لئے یا اس دوران کبھی بھی مانا کرسکتے ہیں آپ کسی سوال کا جواب دینے سے انکار بھی کرسکتے ہیں آپ کو اس کا براہ راست فایدہ نہ ہو اسکا لیکن یہ تحقیق کے نتایج الیکٹرکی کچرے میں کام کرنے والے کارکنوں کی حالت پر مزید روشنی ڈالینگے
آپ کے دے گئے معلومات کی پاسبانی کی جاےگی اس ملاقات کے تفصیل تحقیق کے لئے استعمال کے جایگے آپ کا نام انفرادی جانکاری آپ کے طبقے کی تفصیل تجزیے میں نہیں استعمال ہونگے انٹرویو کی رکاڈنگ اور تحریر میری سربراہ تحقیقکار کی نگاہ دستی میں رہینگے
اگر آپ مثلیے میں حصّہ لینے کے لئے رازی ہن تو ہری مہربانی رضامندی کے بیان کو غور سے پڑنر کے بعد پھر اس میں اپنی رضامندی ظاہرکریں میں آپس اس ملاقات کوریکارڈ کرنے کی اجازت چہونگی اگر آپ کو اس مثلیے کے کسی بھی موضوع یا کوئی اور جانکاری چاہنے ہو تو بلا جھجھک ان لوگوں سے رابطہ کریں سربراہ تھقکر سپنا مشرا E-mail:sapnamishra2510@gmail.com 9907485708
اگر آپ کو باد میے اس بارے میں کوئی سوال یا خدشات ہوں اور آپ میرے علاوہ کسی اور سے بات کرنا چاہتےہیں تو آپ سری چترا ترونل انسٹیٹیوٹ فر میڈیکل سائنسز اینڈ ٹیکنولوگی تریواندرم کے انسٹتٹیل ایتھکس کامتے کے سیکرٹری ڈاکٹر ملا رمناتھن سے رپتہ کرسکتے ہیں mala@sctimst.ac.in 04712524234 اور میل کرسکت ہیں

شکریہ

رضامندی کا بیان

میں نے معلوماتی پرچے کو پڑھا اس مطلبے کی نوعیت اور میری شمولیت واضح کی گیی ہے اور میرے سارے سوالوں کے جواب دے جا چکے ہیں میں اس رضامندی کے پرچے پی دستخط کرکے یہ ظاہر کرتا ہوں کی می سمجھتا ہوں کی مجھ سے کیا توقعو ہے اور یہ کی می اس مطلبے کا حصّہ بننے کے لئے می جانتا ہوں کے میں کسی بھی وقت دستبردار ہوسکتا ہوں یا اسے کھود سکتا ہوں ضرورت پڑنے پر کس سے رابطہ کرنا ہے یہ مجھے بتایا گیا ہے

جی ہاں میں انٹویو/ملاقات کے لئے راضی ہوں

دستخط _____

یا

(اگر مدعا دستخط کرنے کے لئے تیّر نہ ہو (زبانو رضامندی

گواہ کی دستخط _____

گواہ کا نام اور پتا _____

_____

اگر آپ شامل نہیں ہونا چاہتے ہیں تو آپ کے وقت کا شکریہ

مدعا کا نام _____

مدعا کا پتا _____

_____

انٹرویو لینے والوں کا نام

_____

انٹرویو لینے والوں کے دستخط _____

(unique identification code)مدعا کا منفرد پہچان کوڈ : _____ تاریخ _____ پتا

AXXV. Table summarizing differences between the three social security bills

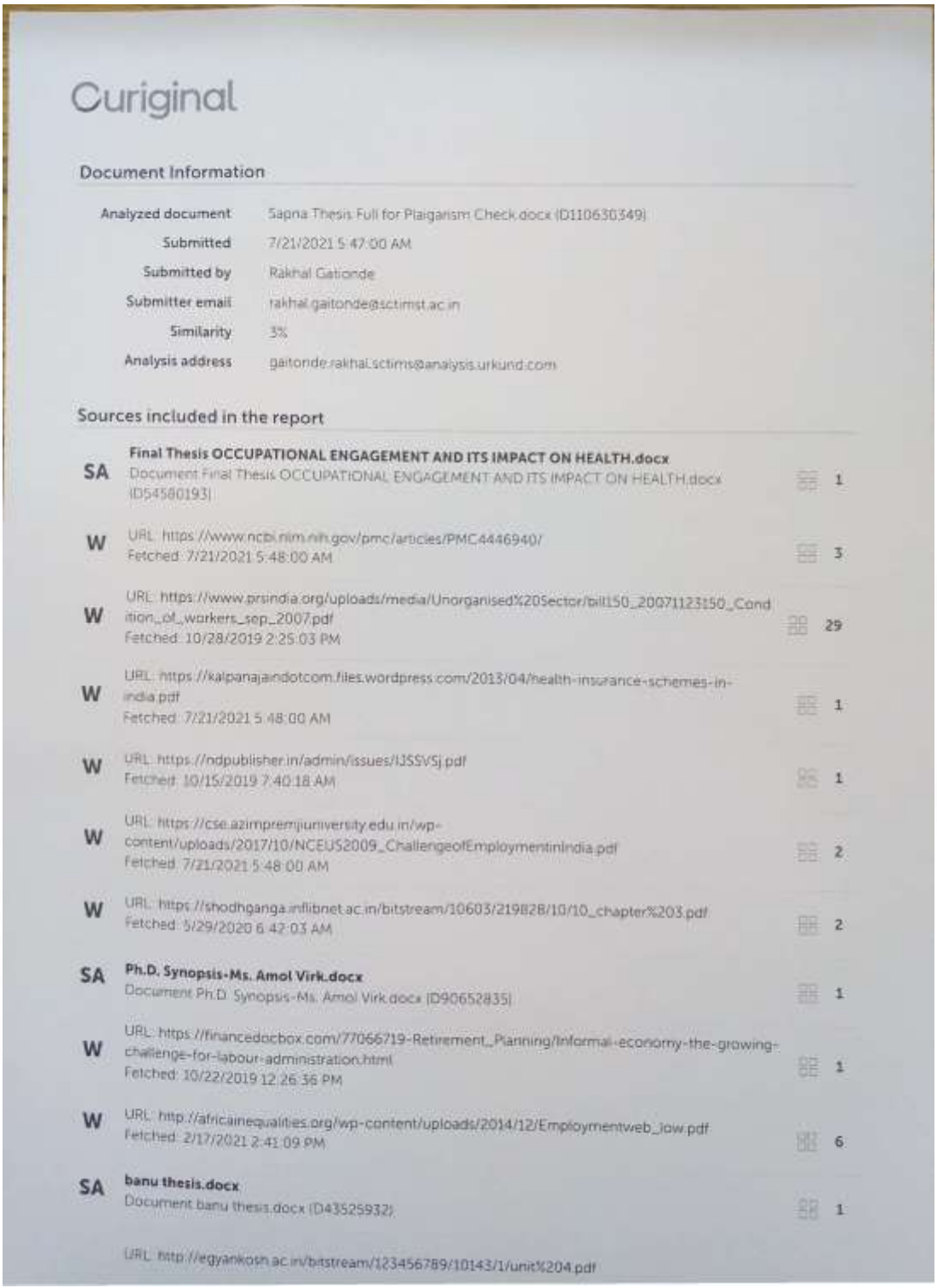
	Social security section (2004 draft bill) for unorganised sector workers	**Social security section** (2007 draft bill) for non-agricultural unorganised workers	**The Unorganised Workers Social Security Act, 2008**
Domains covered	• Same bill for both agricultural & non-agricultural unorganised workers • Applicable only to schedule employment • <u>Social security benefits</u> The appropriate govt. shall frame schemes for the welfare of workers Health & medical care Pension scheme- widow or widower/s pension, children pension or orphan pension payable to the beneficiaries of such workers.	• Different bill for agricultural & non-agricultural unorganised workers • Applicable to all workers irrespective of schedule employment • It also includes migrant workers along with other non-agricultural unorganised workers • <u>Social security benefits</u> Central govt. schemes & state govt. schemes	• Same bill for both agricultural & non-agricultural unorganised workers • Applicable to all workers irrespective of schedule employment • No mention of migrant workers • <u>Social security benefits</u> It also offers almost social security benefits under Central govt. schemes & state govt. schemes but are less elaborate as compare to the earlier bill
Implementation structure & the proposed process for implementation	**Central Unorganised sector workers' welfare board** Limited number of functions <u>Composition of board</u> No mention of Trade union Other than a chairperson (to be appointed by central govt.) along with the Director General (Labour Welfare) an arbitrary number of 20	**National social security & welfare board** elaborate number of functions <u>Composition of board</u> Consist of variety of stakeholders including Trade Unions	**National social security board** limited ambiguous functions <u>Composition of board</u> Does not include Trade Union. Other than Union Minister of Labour & Employment along with the Director General (Labour Welfare) an arbitrary number of 34 members to be nominated

	members to be nominated by the Central govt.		by the Central govt.
		Functioning of board- through secretariat	Functioning of board-No mention regarding how the board will function
	Funding- Creation of unorganised sector workers' welfare fund- limited no. of stakeholders (central govt. state govt., employers, beneficiaries, any other sources)	Funding- creation of national fund (National social security & welfare fund)- contributions from a range of stakeholders *The share of contribution of the BPL workers, if any, would be borne by the Central Government*	Funding- funding of central govt. schemes-limited no. of stakeholders (central govt. state govt., employers, beneficiaries) Nothing on BPL workers
	(Name of state) Unorganised sector workers' welfare board	**State social security & welfare board**	**State social security board**
	limited ambiguous functions	elaborate number of functions	limited ambiguous functions
	Composition of board Does not include Trade Union. Other than chairperson & member secretary an arbitrary number of 20 members to be nominated by the State govt.	Composition of board Consist of variety of stakeholders including Trade Unions	Composition of board Does not include Trade Union. Other than State Minister for Labour & Employment along with the Principal Secretary (Labour) an arbitrary number of 28 members to be nominated by the State govt.
		Functioning of board- through secretariat	Functioning of board-No mention regarding how the board will function

		Funding- contributions from a range of stakeholders **Registration of workers** Age limit- workers should be 18 years or more Income-monthly income should not exceed 6500 Self-declaration Unique identification social security number-in the form of identity card-at district level Portability issue on migration and cessation of registration **Delivery of social security benefits** • Separate heading on implementation machinery • Workers' facilitation centres (WFC) o involvement of a range of actors o Functions of WFC-*Obtain registration from the District Committee and deliver the Identity Cards to the registered non-agricultural workers;*	Funding- funding of state govt. schemes-limited no. of stakeholders (. state govt., employers, beneficiaries, central govt.) **Registration of workers** Age limit- workers should be 14 years or more Income- nothing mentioned about income limit Self-declaration Unique identification social security number-in the form of identity card-at district level Nothing mentioned about portability on migration and cessation of registration **Delivery of social security benefits** • No separate heading on implementation machinery • Workers' facilitation centres o no mention about who would be designated as WFC o Functions of WFC-Almost similar to the previous one other than one *assist workers to obtain registration from the*
	Delivery of social security benefits • Workers' facilitation centres (WFC) o Govt. officer and employees appointed by the govt. o Functions-including resolution of disputes		

		○ Premium & compensation benefits Enforcement & dispute resolution bodies	*district administration* ○ No mention about premium & compensation benefits No mention of Enforcement & dispute resolution bodies

AXXVI. Plagiarism report



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