EXTENT OF NEGATIVE EMOTIONAL STATES - DEPRESSION, ANXIETY, AND STRESS AMONG SANITATION WORKERS WITH A FOCUS ON 'SELF-REPORTED DISCRIMINATION' IN DINDIGUL MUNICIPAL CORPORATION, TAMILNADU.

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Dissertation submitted in partial fulfilment of the requirements for the award of the degree of Master of Public Health

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JUNE, 2025

ACKNOWLEDGEMENTS

I would like to begin by expressing my profound gratitude to the Almighty for granting me the strength, perseverance, and resilience necessary to complete this work.

I am deeply indebted to my guide, ***Dr. Rakhal Gaitonde***, for his unwavering support and insightful guidance throughout this thesis. His mentorship has been instrumental in shaping my academic journey and instilling in me the confidence and enthusiasm to undertake and complete this work.

I extend my sincere appreciation to all the esteemed faculty members of the Achutha Menon Centre for Health Science Studies — Dr. Mala Ramanathan, Dr. Srinivasan Kannan, Dr. Biju Soman, Dr. Ravi Prasad Varma, Dr. Jeemon P., Dr. Manju Nair R., Dr. Jissa V. T., and Dr. Srikant — for their invaluable guidance, encouragement, and critical insights, all of which greatly enriched the quality of this work.

I am profoundly grateful to all those who contributed to the translation and back-translation of the ***Experience of Discrimination*** scale, as well as to the experts who provided their valuable input during the content validation process. I would also like to express my sincere thanks to the ***Commissioner of Dindigul City Municipal Corporation*** for extending their support and facilitating the conduct of this study.

Furthermore, I am deeply thankful to ***Dr. Nancy Krieger***, the author of the ***Experience of Discrimination*** Inventory, for her kind permission to translate and validate the tool for this research.

I extend my heartfelt thanks to my batchmates for their camaraderie and support throughout this journey. Finally, I express my deepest gratitude to all the participants whose willingness to share their time and experiences made this study possible.

DECLARATION

I hereby declare that this dissertation entitled ***"Extent of Negative Emotional States - Depression, Anxiety, and Stress Among Sanitation Workers with a Focus on 'Self-Reported Discrimination' in Dindigul Municipal Corporation, Tamilnadu"*** is a bonafide record of my original research work. This dissertation has not been submitted, either in part or in full, to any other university or institution for the award of any degree or diploma. All sources of information, including published and unpublished works of other authors, have been appropriately cited and acknowledged within the text.



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CERTIFICATE

This is to certified that the dissertation entitled ***"Extent of Negative Emotional States - Depression, Anxiety, and Stress Among Sanitation Workers with a Focus on 'Self-Reported Discrimination' in Dindigul Municipal Corporation, Tamilnadu"*** is a Bonafide record of the research work carried out by ***Dr. K. Vigneshwaran*** under my guidance and supervision.

This dissertation is submitted in partial fulfillment of the requirements for the award of the ***Master of Public Health*** degree.



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June, 2025

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GLOSSARY OF ABBREVIATIONS

AOR ..... Adjusted Odds Ratio

DASS-21.....Depression, Anxiety, Stress Scale

EOD.....Experiences of Discrimination

GoTN ..... Government of Tamil Nadu

ICC.....Interclass correlation coefficient

I-CVI.....Item-Level Content Validity Index

KR-20.....Kuder-Richardson

NAMASTE ..... National Action for Mechanised Sanitation Ecosystem

NGOs ..... Non-Governmental Organisations

NSKFDC..... National Safai Karamcharis Finance and Development Corporation

OR ..... Odds Ratio

Pc.....Probability of chance agreement

S-CVI.....Scale-Content Validity Index

TNUSSP ..... Tamil Nadu Urban Sanitation Support Programme

WHO ..... World Health Organisation

Abstract

Background: Despite various constitutional safeguards, the caste system continues constrain the occupational roles that Dalits can take on. In India, this mean that Dalits are still concentrated in sanitation work. This occupation remains highly stigmatized and hazardous, exposing workers not only to social exclusion but also to economic insecurity and health risks. Continuing discrimination not only constrains social mobility but also affects the mental health of sanitation workers.

Methodology: This study employs a quantitative cross-sectional design to assess the mental health of sanitation workers in the Dindigul Municipal Corporation and explore its relationship with self-reported discrimination. The Experiences of Discrimination (EOD) Scale was translated into Tamil and validated through a systematic process involving forward translation, reconciliation, back-translation, expert review, and cognitive debriefing. A sample of 243 sanitation workers was selected using stratified random sampling, ensuring representation from permanent and temporary workers. Mental health was measured using the DASS-21 (Depression, Anxiety, Stress Scale). Data were collected using a structured questionnaire, and statistical analysis was performed to examine the relationship between discrimination and mental health outcomes.

Results: Phase One of this study focused on translating and validating the Experience of Discrimination (EOD) Scale into Tamil to assess caste-based discrimination. The scale showed high content validity (S-CVI/Ave = 1.00), with cognitive interviews revealing key terms that were revised for cultural relevance. Reliability testing indicated strong internal consistency (KR-20 = 0.76) and excellent test-retest reliability (ICC = 0.82–0.96). Phase Two, a survey of 243 sanitation workers, found high levels of caste-based discrimination (69.5%) and Extent of negative emotional states (95.5% depression, 97.5% anxiety, 84.4% stress). Discrimination correlated with mental health outcomes, with hereditary work status and substance use predicting higher distress.

Conclusion: In summary, this study fills an important gap in assessment tools pertaining to a highly marginalized group (sanitation workers) by providing validation for the Tamil version of the Experience of Discrimination (EOD) Scale. A measure of discrimination at a point in time or within a domain may not capture the systemic effects of discrimination. Future research should expand on this work by considering longitudinal data to examine the impact of repeated exposure to discrimination on mental health**.**

CHAPTER 1

INTRODUCTION

1.1 Background information

India's caste system, which originated during the Vedic period (c. 1500–1000 BCE), has had a long-lasting impact on social structure, occupational mobility, and opportunities. This complex social hierarchy divides society into four main castes, with Dalits (formerly known as "untouchables") positioned at the bottom. Historically, Dalits have faced severe discrimination and have been relegated to menial, ritually polluting tasks. This system not only perpetuates exploitation and surplus extraction by higher castes but also reinforces the marginalization and underrepresentation of Dalits in employment (Subramaniam, 2018). Despite modern legal protections against caste discrimination, Dalits continue to experience systemic marginalization, particularly in the sanitation sector. Here, caste-based job allocation has entrenched societal stigma, undervalued the contributions of marginalized workers, and further restricted their career mobility, deepening existing inequalities (Shetty et al., 2022).

Scheduled caste households, as observed by (Banerjee and Knight, 1985) experienced higher rates of poverty due to their reliance on wage labor, limited career opportunities, and lower wages. This pattern of economic vulnerability persists even today, as many sanitation workers continue to migrate in search of better opportunities. Unfortunately, they often face exploitative working conditions in urban areas, perpetuating the same cycle of poverty and hardship that existed decades ago (Subramanyam and Bouma, 2024).

Discrimination affects all facets of life and takes the form of unequal treatment based on perceived identity. Violence against marginalized communities and systematic injustice are the results of the caste system (Krishnamurthi and Krishnaswami, 2020).

Due to severe prejudice, sanitation workers—who are primarily members of marginalized castes—fall into the lowest socioeconomic strata. They face economic problems and social marginalization, which restricts their access to essential services and rights (Kaur, 2022). Such prejudice has a major negative influence on mental health, which is essential to general well-being. It is described as a state that permits people to contribute to their community and manage life's pressures by the World Health Organisation (WHO, 2022). But with lifetime rates ranging from 12.2% to 48.6%, India has an alarmingly high prevalence of mental illnesses (Dhyani et al., 2022).

Mental health is seriously impacted by discrimination. Bias in its various manifestations has been connected to altered neural systems and decreased mental well-being (Schouler-Ocak and Moran, 2023). Persistent discrimination has a negative impact on sanitation workers' mental health by lowering their social support networks and creating a negative self-image (Farrelly et al., 2015). Numerous detrimental psychological outcomes, such as anxiety, stress, depression, and suicidal thoughts, have been connected by research to discrimination (Selvarajah et al., 2022). Furthermore, the hazardous working circumstances faced by sanitation workers in India pose significant health challenges. According to Gada, they are more vulnerable to gastrointestinal infections, skin conditions, and respiratory issues (Gada et al., 2023). Their mental health problems are made worse by the stigma attached to their line of work and high levels of stress (Kadam et al., 2023; Raghavendra and Kumar, 2022). Due to people not seeking prompt treatment for work-related illnesses, their health state worsens when healthcare services are inaccessible (Kumar and Shetty, 2024).

Globally, anxiety and depression rank among the most prevalent mental health conditions. 280 million people worldwide, or around 3.8% of the population, are estimated to be affected by depression; 5% of adults and 5.7% of individuals over 60 are affected (WHO, 2022). In 2019, an estimated 301 million individuals globally were affected by anxiety disorders (WHO, 2022). Anxiety disorders impact around 4% of the population. Sanitation workers' mental health problems are a reflection of the psychological effects of caste-based discrimination, which exacerbates the difficulties of their already challenging occupations (Ziyauddin, 2022). In addition to having an impact on their social status, prejudice also adds to low self-esteem, a lack of social support, and pessimism that negatively impact their mental health and have unfavorable effects. Even though caste discrimination is forbidden by the Indian Constitution (Articles 15 and 17), the situation for sanitation workers is nonetheless difficult. Research on the mental health status of this vulnerable demographic needs to be targeted because of the disparity between lived experiences.

1.2 Rationale

It is crucial to understand the relationship between caste-based discrimination and mental health. Despite constitutional protections against caste discrimination (Articles 15 and 17), sanitation workers, predominantly from marginalized castes, continue to face significant social and economic challenges (Krishnamurthi and Krishnaswami, 2020).

- In India, there are almost five million individuals engaged in various forms of sanitation labor, out of whom around two million are employed in hazardous occupational settings (Dalberg Advisors, 2019). However, because of the nature of their job, they often face discrimination and stigma (WaterAid India, 2023).
- Existing literature shows a research gap in addressing the mental health challenges faced by sanitation workers (Kadam et al., 2023).

- Literature suggests that experiencing discrimination can impact mental health, leading to increased depression, anxiety, and stress.
- Research has shown that discrimination contributes to poor self-image, reduced social support, and a sense of hopelessness among marginalized groups (Farrelly et al., 2015).

Research on the mental health of sanitation workers is limited, indicating the need for studies to address their mental health, which is affected by discrimination.

1.3 Objectives

Primary Objective:

- To find the extent of negative emotional states - depression, anxiety, and stress among sanitation workers.
- Translate the "Experiences of Discrimination" (EOD) Scale into Tamil and validate the translation in assessing the levels of discrimination among sanitation workers.

Secondary Objective:

- To find the relationship between discrimination and depression, anxiety, and stress among sanitation workers.

CHAPTER 2

REVIEW OF LITERATURE

The first section of the literature review explores India's caste system, tracing its origins and its connection to caste-based employment, particularly focusing on sanitation workers. The second section discusses discrimination, beginning with a general definition and narrowing down to caste-based discrimination. It also covers constitutional provisions and state policies aimed at promoting equality and social justice. The third section reviews programs for the welfare of sanitation workers, highlighting the efforts made by government and non-governmental organizations. The fourth section addresses mental health, focusing on how factors like caste and occupation affect conditions such as depression, anxiety, and stress, particularly among sanitation workers. The final section examines the impact of discrimination on mental health, emphasizing the public health relevance of the study by linking caste-based discrimination to adverse Mental health outcomes.

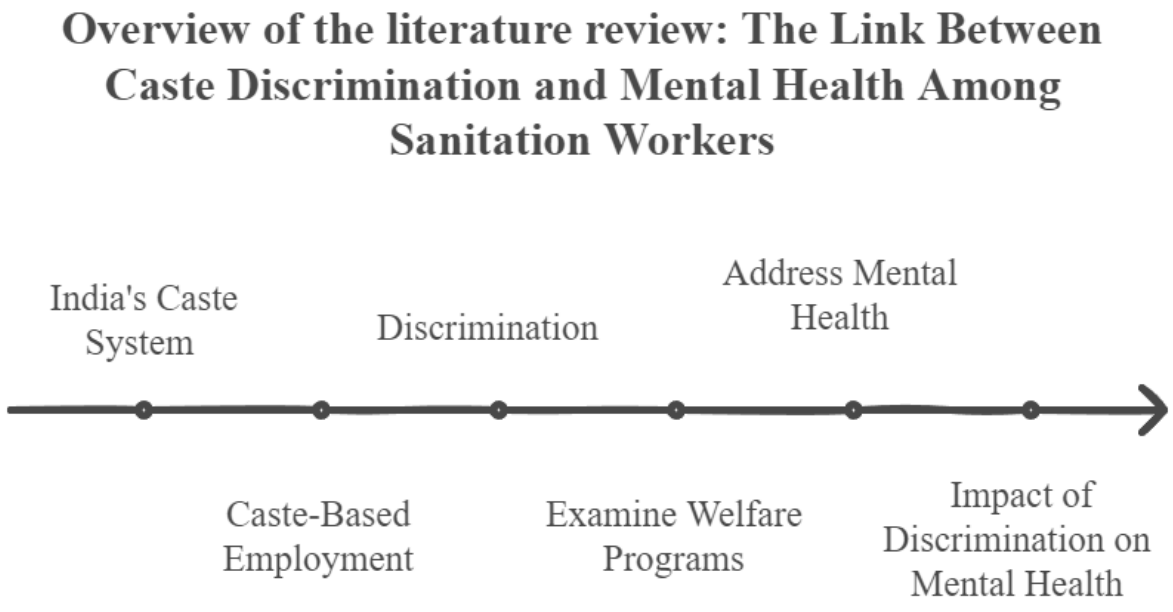


Figure 1: Overview of the literature review

2.1 Purpose of literature review

This literature review aims to systematically review and appraise the selected articles, book chapters, and reports about India's caste system in general, with a focus on the employment opportunities based on caste and the welfare aspect of sanitation workers. This review will also explore the role of caste-based discrimination and its relationship with mental health outcomes, including depression, anxiety, and stress among sanitation workers, and identify current gaps in the literature.

2.2 Keywords and Search Engines Used

The literature search used Google Scholar, Web of Science, and other sources.

Database	Search Keywords
Web of Science	Depression, Anxiety, Stress, “Prevalence”, "Mental health", "Discrimination", “India”
Google Scholar	Depression, Anxiety, Stress, Discrimination, "Sanitation workers", “India”, "Mental health"
Excluded Criteria	“COVID-19”
Additional records obtained from other sources, as recommended by my "Guide"	

Table 1: Keywords and Search Engines Used

2.3 Source of the word "caste"

Portuguese explorers in India throughout the 16th century recorded a racialized social stratification they called "casta," which translates to "race" in Portuguese. These days, this phrase is frequently used to describe civilizations that are structured around inherited groupings, not only in South Asia but also in many other parts of the world (Caste System in Ancient India - World History, 2024).

2.3.1 India's Caste System

The Indian caste system is one of the most enduring societal structures globally, with origins tracing back around 3000 years. Although the architects of post-colonial India abolished it in the 20th century through the constitution, its social, cultural, and economic

impacts may still be seen in Indian society today, and many people argue that it is still very much a part of the country's everyday lives.

The system, which has five basic tiers, describes a hierarchy in which a person's caste, which is determined by birth, determines the laws governing their relationships, careers, endogamy, and everyday customs.

The community was split into four primary groups: Shudras (laborers), believed to have beenborn from the feet of the creator; Vaishyas (merchants, farmers), born from the thighs; Kshatriyas (warriors, rulers), born from the arms (priests, scholars); and Brahmins (priests, born from the mouth). Each caste was ascribed physical attributes based on their social functions (brain power, arm strength, etc.). The untouchables, also known as "Dalits" or "Shudras," were positioned lower and outside the hierarchy and were assigned menial and polluting and stigmatized chores (Zaidi, 2021).

2.3.2 Caste-based employment

The caste system has a big impact on jobs in India, especially in sanitation. Traditionally, these "unclean" jobs have been largely given to members of Dalits, which has led to societal stigma and an underappreciation of their contributions (Monteiro, 2022). This pattern continues, as evidenced by recent data that nearly 69% of the 38,000 sanitation workers profiled belong to Scheduled Caste (SC) communities, while about 15% are from Other Backward Classes (OBCs), and 8% each from Scheduled Tribes (ST) and general categories. The Centre estimates that there are approximately one lakh sanitation workers in 4,800 urban local bodies, reflecting the deep-rooted association of caste and labor in the sector (Lakshman, 2024). Studies show that compared to non-scheduled caste homes, households in scheduled castes frequently depend more on wage labor, have fewer work possibilities, and receive lower incomes. As a result, observed by (Banerjee and Knight,

1985). experienced higher rates of poverty due to their reliance on wage labor, limited career opportunities, and lower wages. This pattern of economic vulnerability persists even today, as many sanitation workers continue to migrate in search of better opportunities. Unfortunately, they often face exploitative working conditions in urban areas, perpetuating the same cycle of poverty and hardship that existed decades ago (Subramanyam and Bouma, 2024). The Indian socio-political landscape, which is heavily impacted by the caste system, makes it difficult for people to pursue a variety of careers and perpetuates inequality, particularly in the field of sanitation (Shetty et al., 2022).

2.3.3 Sanitation workers

The cleanliness and hygiene of our surroundings are crucially maintained by sanitation workers. The report by Dalberg Associates classifies sanitation work into nine different types, as follows (See Figure:2)

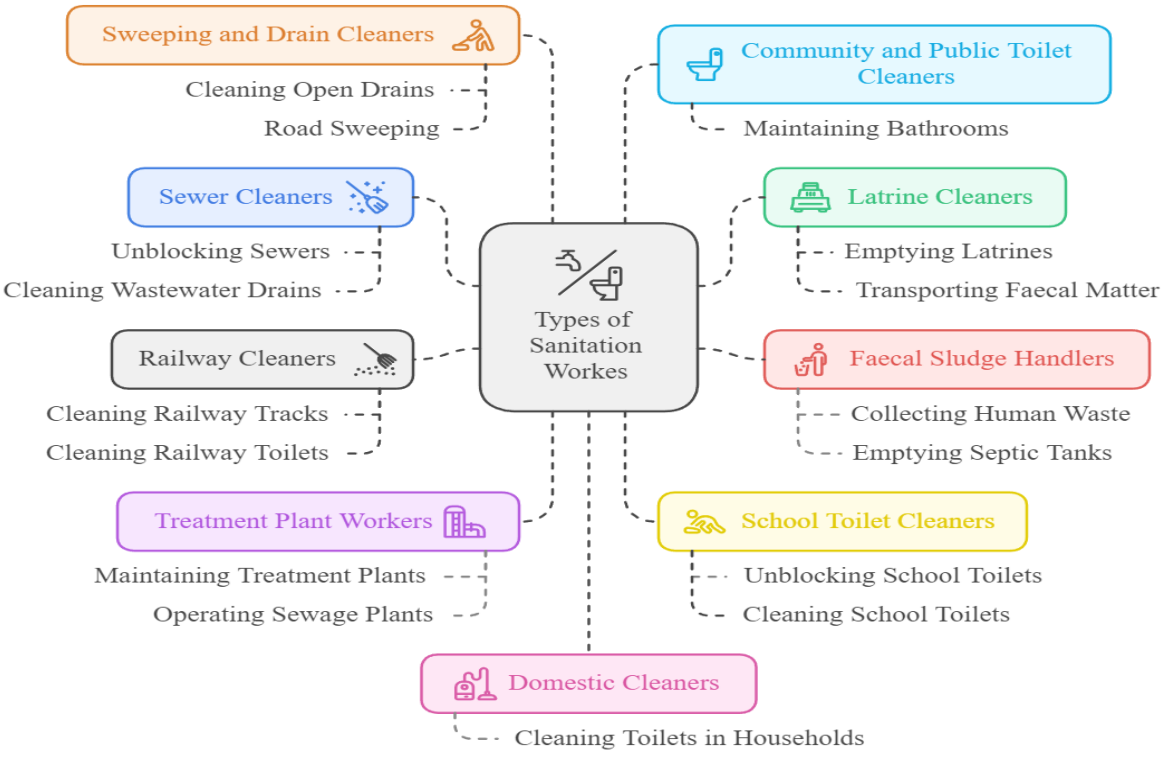


Figure 2: Nine different types of Sanitation Works

Source: (Dalberg Advisors, 2019).

In India, there are estimated to be almost five million individuals engaged in various forms of sanitation labor, out of whom around two million are employed in what may be considered or classified as hazardous occupational settings (Dalberg Advisors, 2019). In addition, because of the nature of their job, they often face discrimination and stigma (WaterAid India, 2023).

2.4 Discrimination

2.4.1 Definition

"Discrimination is differential treatments or outcomes that are unfavorable towards a group or an individual according to some aspect of their actual or perceived identity." (Devakumar et al., 2022). Unless otherwise noted, discrimination is what the authors mean when they talk about prejudices based on caste, ethnicity, Indigeneity, immigrant status, race, religion, or skin color. It is critical to recognize that the labels that are applied to people and used as justification for prejudice are social constructs intended to oppress and divide people (Devakumar et al., 2022). They assert that discrimination is not just an ideological or personal issue, but also a structural one. They introduce "separation" and "hierarchical power," which are the underlying mechanisms of structural discrimination. These principles are evident in a wide range of institutional systems that influence social interactions and governance on multiple levels. They demonstrate how laws were used to uphold social hierarchies and power disparities under racist and xenophobic historical governance systems. Discrimination is a pervasive social issue that has an impact on individuals from diverse backgrounds and can take many different forms. Research indicates that bias significantly affects a person's psychological state and general well-being. For instance, Lange et al. highlight the connection between marginalized groups' perceptions of discrimination and their increased psychological distress (Lange-Maia et al., 2024). In addition, Robinson and Kerr discuss the intersectionality of

discrimination, emphasizing that individuals who experience many forms of discrimination face compounded negative effects that result in difficulties obtaining resources and support (Robinson and Kerr, 2024).

2.4.2 Caste Discrimination

In South Asia, there is a hierarchical kind of social stratification known as the caste system. It has to do with inheriting particular social position, which usually impact career decisions according to "*varna*" and "*jati*." This system assigns People to various social groups according to their responsibilities and each of these particular and predefined social statuses, which are primarily set at birth. The caste system is characterized by several important elements, including the fact that it is inherited from previous generations and typically necessitates marriage within the same caste; it is strongly tied to social and religious traditions; it centers on concepts of "purity" and "pollution"; and it divides society into a hierarchy in which higher castes dominate lower castes, Dalits, and tribal people. Caste discrimination is the unfair treatment, segregation, and oppression that people face depending on their inherited caste status. It persists through social, religious, and financial laws and leads to systematic injustice and violence against underprivileged groups (Krishnamurthi and Krishnaswami, 2020). Sanitation workers are heavily impacted by caste prejudice, which frequently pushes them to the lowest socioeconomic strata and exposes them to structural injustices. According to research, marginalized caste groups are mostly responsible for performing sanitation work, which contributes to social stigma and prejudice in the workplace and in contact with the community (Sathishwaran and Sethurajakumar, 2022). The results demonstrate that these workers experience social marginalization in addition to economic difficulties, which prevents them from having access to essential rights and services (Kaur, 2022). Furthermore, the psychological effects of discrimination based on caste are reflected in mental health problems among sanitation

workers, making their already difficult jobs much more difficult (Ziyauddin, 2022). In India, Scheduled Castes (SC) and Scheduled Tribes (ST) are disproportionately affected by health inequities, especially when it comes to maternal health and elder care. SC and ST women are disproportionately more likely to experience maternal fatalities than women in other populations, and their offspring also typically have low birth weights. Elderly members of the SC and ST communities also receive less medical care prior to death than Hindus from higher castes. These issues highlight significant disparities in the standard and accessibility of healthcare for these disadvantaged populations (Ravindran and Gaitonde, 2018). Ormiston and colleagues go deeper into the role of systemic discrimination in healthcare settings, showing how biases can lead to variations in the outcomes and treatment of minority populations (Ormiston et al., 2024).

2.4.3 Constitutional Provisions for Equality

Article 15: Prohibition of Discrimination

Article 15 prohibits discrimination based on caste, religion, sex, country of birth, or race. It gives the state the authority to create specific measures for the advancement of socially and educationally underprivileged groups, such as Scheduled Tribes and Castes (SCs and STs). It also forbids limiting access to hotels, retail establishments, public entertainment venues, or public areas for these reasons (Constitution of India | Legislative Department | India, 2024).

Article 17: Prohibition of Untouchability

The Indian Constitution's Article 17 proscribes untouchability. It states that untouchability in any form is prohibited and will be dealt with as a criminal offense. The goal of this clause was to guarantee everyone's equality and dignity while also eliminating the social ill of untouchability (Constitution of India | Legislative Department | India, 2024)

2.4.4 Directive Principles of State Policy

Article 43: Living wage, etc., for workers

The State will strive to ensure that all workers, whether in agricultural, industrial, or other sectors, **receive a fair wage** and **appropriate working conditions** that guarantee a satisfactory quality of life and the ability to fully enjoy leisure and social and cultural opportunities. Specifically, the State will strive to encourage cottage industries in rural areas, either on an individual or cooperative basis (Constitution of India | Legislative Department | India, 2024).

Article 43A: Participation of workers in the management of industries

The state will **take action to ensure that workers** are involved in the management of projects, establishments, or other organizations involved in any industry, either through appropriate laws or in other ways (Constitution of India | Legislative Department | India, 2024).

Article 46: Promotion of educational and economic interests of Scheduled Castes, Scheduled Tribes, and other weaker sections

Special attention will be given by the State to the educational and economic interests of the less privileged segments of the population, namely the Scheduled Castes and the Scheduled Tribes. Furthermore, they shall be **safeguarded against social injustice and all types of exploitation** (Constitution of India | Legislative Department | India, 2024).

2.5 Programs for the welfare of sanitation workers

2.5.1 Welfare Programs by the Ministry of Social Justice & Empowerment

A range of loan-based and non-loan-based policies and programs are being implemented by the National Safai Karamcharis Finance and Development Corporation (NSKFDC) to

enhance the socioeconomic status of sanitation workers and their dependents. The schemes are given below.

Loan-based scheme

- **Self-Employment Scheme for Rehabilitation of Manual Scavengers**

  The purpose of the scheme is to assist the manual scavengers, identified during various surveys, in their rehabilitation in alternative occupations The identified manual scavengers, one from each family, would be entitled to get Cash Assistance of Rs. 40,000. The repayment period for the loan amount is 2 years. The interest rate for the loan amount falls over the range of 5-6 percent.

- **Standard Term Loan Scheme**

  The program aims to provide financial aid in the form of loans to sanitation workers for income-generating activities related to sanitation. The program provides the beneficiary with a loan sum of up to Rs. 15 lakhs or 90% of the cost of the unit. Projects under two lakh rupees do not require beneficiary contributions; projects over two lakh rupees require 5% of the project's cost to come from beneficiaries. The loan amount has a ten-year repayment period, which begins six months after the loan amount is issued.

Non-loan-based scheme

- **Pre-Matric Scholarships**

  The scheme aims to offer financial aid to children of sanitation workers so they can receive primary education. Students under this initiative receive a monthly allowance of Rs. 110. The scholarship is available until the completion of class X and runs for ten months during the academic year.

- **Training programs for skill development**

  Financial support is given to sanitation workers in the 18–45 age range to help them develop their skills. The program's beneficiaries receive a 100% grant in the form of a stipend.

2.5.2 Tamil Nadu Urban Sanitation Support Programme (TNUSSP)

The Tamil Nadu Urban Sanitation Support Programme (TNUSSP) was established in 2015 to strengthen the Government of Tamil Nadu's (GoTN) efforts in achieving its sanitation goals. The main objective of the program is to improve urban sanitation practices in Tamil Nadu. Two independent phases comprise the project, which has a five-year duration. The first phase, which took place from November 2015 to October 2017, focused on strategic planning, innovation, improvement of capacities, initiation of behavioral changes, promotion of community engagement, encouragement of entrepreneurial activities, and supervision of information distribution. Phase 2, scheduled to last for three years from November 2017 to March 2020, will build upon the achievements established in Phase 1. This stage will see a shift in focus from direct implementation help to offering demand-driven consulting services to urban local bodies (TNUSSP, 2024).

2.5.3 National Action for Mechanised Sanitation Ecosystem (NAMASTE)

Goal of NAMASTE

The NAMASTE Scheme in India aims to ensure the safety and dignity of sanitation workers by recognizing their vital role in sanitation infrastructure. It focuses on providing sustainable livelihoods, enhancing occupational safety, and empowering workers through access to entitlements and self-employment opportunities. Additionally, NAMASTE promotes behavior change to increase respect for sanitation workers and improve demand

for safe sanitation services by centralizing cleaning tasks under the scheme (Department of Social Justice and Empowerment - Government of India, 2024).

2.6 Mental health

2.6.1 Definition

"Mental health is a state of mental well-being that enables people to cope with the stresses of life, realize their abilities, learn well and work well, and contribute to their community" is known as mental health (WHO, 2022). Our mental health affects our decision-making, interpersonal interactions, and social impact, all of which are critical to our general well-being. A person's emotional intelligence, genetics, substance use, and other personal circumstances can all have an impact on their mental health, which is a fundamental human right and can make them more susceptible to mental health issues. Moreover, exposure to negative social, financial, and environmental factors, including poverty, violence, injustice, and environmental damage, raises the possibility of mental health issues emerging (WHO, 2022).

2.6.1.1 Epidemiological Insights on Mental Health

According to a district-level epidemiological survey carried out by the World Health Organisation (WHO), the population's prevalence of mental diseases varied between 12.2% and 48.6% over the course of a lifetime and between 8.4% and 29% over a 12-month period. The frequency of mental illnesses and the accessibility of therapy differed significantly. The prevalence of mental illness and disease has a detrimental impact on the country's development in addition to causing great hardship for those who are afflicted. Extreme psychological pain is caused by a variety of factors in families and people, including but not limited to societal stigma, poverty, ignorance, understanding of mental health issues, and religious convictions. Numerous epidemiological surveys carried out at the district

level throughout India have demonstrated the significant impact that mental illness has on both urban and rural communities. Non-governmental organisations (NGOs) have started a number of base camps, programs, health education initiatives, research, diagnostic centers, and mental health preventive measures to improve the population's mental health (Dhyani et al., 2022).

2.6.2 Depression

"Depressive disorder (depression) is a common mental health disorder. It involves a depressed mood or loss of pleasure or interest in activities for long periods." (WHO, 2022)**.** An estimated 3.8% of people in total, including 5.7% of individuals 60 years of age and above, and 5% of adults (4% males and 6% women), experience depression. It is connected to feelings of depression, unhappiness, or a protracted disinterest in activities. Globally, depression affects about 280 million people. Biological (genetic predisposition, chronic and terminal illnesses), psychological, social (family relationships, interpersonal relationships, experience of violence and disasters), cultural (religious beliefs, caste, attitudes), and economic factors are among the many risk factors that influence depression (WHO, 2022).

2.6.3 Anxiety

"Everyone can feel anxious sometimes, but people with anxiety disorders often experience fear and worry that is both intense and excessive." (WHO, 2022)**.** Anxiety disorders can affect anyone, but they are more likely to develop in those who have experienced abuse, major losses, or trauma. Anxiety disorders affect about 4% of people worldwide. According to (WHO, 2022). This is the most prevalent mental disorder.

2.6.4 Stress

"Stress can be defined as a state of worry or mental tension caused by a difficult situation" (WHO, 2022)**.** Stress in moderation can help us accomplish our daily duties. On the other hand, a lot of stress can cause several issues with both physical and mental health. Furthermore, stressful circumstances have the potential to cause or exacerbate mental health conditions like depression and anxiety (WHO, 2022).

2.7 The Effects of Discrimination on Mental Health

In India, discrimination—especially that connected to the Caste System—has a serious negative impact on the mental health of sanitation workers. Enshrined discrimination is maintained when people from the lowest Dalit subcastes are given sanitation responsibilities (K, 2019). Research has demonstrated that several types of bias, including racial discrimination, have a significant impact on mental health and are associated with reduced mental well-being and changes in the nervous system (Schouler-Ocak and Moran, 2023). This prejudice has a detrimental effect on their social standing in addition to creating a poor self-image, less social supports, and a hopeless sense, all of which have a substantial detrimental influence on their mental health and produce unfavourable results (Farrelly et al., 2015). According to (Selvarajah et al., 2022). It can result in a number of detrimental psychological impacts, such as anxiety, depression, emotional difficulties, self-reported stress, and suicidal thoughts.

2.8 Sanitation workers' health outcomes

The dangerous work situations that they are exposed to provide considerable health challenges for sanitation workers in India. According to studies, these workers are more vulnerable to respiratory problems, skin diseases, and gastrointestinal infections, among other illnesses. This is mainly because they don't take enough precautions and are exposed

to germs that are present in waste materials (Gada et al., 2023). Furthermore, studies highlight the detrimental effects on sanitation workers' mental health, which are typified by high-stress levels and the stigma associated with their line of work (Kadam et al., 2023; Raghavendra and Kumar, 2022). In addition, the scarcity of healthcare services exacerbates the state of their health because many sanitation workers fail to seek treatment for ailments related to their jobs in a timely manner (Kumar and Shetty, 2024).

2.9 Measurements

2.9.1 Experience of Discrimination (EOD)

Measuring discrimination and its impacts on population health involves various approaches, as highlighted by Nancy Krieger. These methods include

- Indirectly measuring the health effects of discrimination,
- **Measuring self-reported experiences of direct discrimination and its health effects**
- Measuring population-level experience of discrimination and health effects.

Nancy Krieger's work highlights the significant impact of social determinants on health disparities among various racial and socioeconomic groups. The author highlights the substantial influence of structural, institutional, interpersonal, and internalized racism on health outcomes. This impact is mostly shown through biased healthcare delivery and exposure to stressful situations associated with prejudice (Krieger et al., 2005).

The "Experiences of Discrimination" (EOD) measure, developed by Nancy Krieger, is a statistically validated tool designed to assess occurrences of racial discrimination among different populations, particularly among persons from the working class. The EOD demonstrated a strong level of reliability and validity, as shown by a Cronbach's alpha of 0.74 or above and consistent test-retest reliability coefficients of 0.70. Krieger's research

emphasizes the significance of appropriately assessing instances of racial discrimination, as these encounters might result in elevated blood pressure and other health complications. The researchers found that 80% of Black adults aged 25 to 37 who took part in the CARDIA study reported experiencing racial discrimination, highlighting the pervasive nature of this issue in their everyday lives (Krieger and Sidney, 1996).

This tool aims to provide a reliable means to quantify discrimination's impact on health outcomes (Krieger, 1990).

CHAPTER 3

METHODOLOGY

3.1 Translation and validation of the translation Process of the EOD Scale

3.1.1 Flowchart Depicting Steps in Methodology

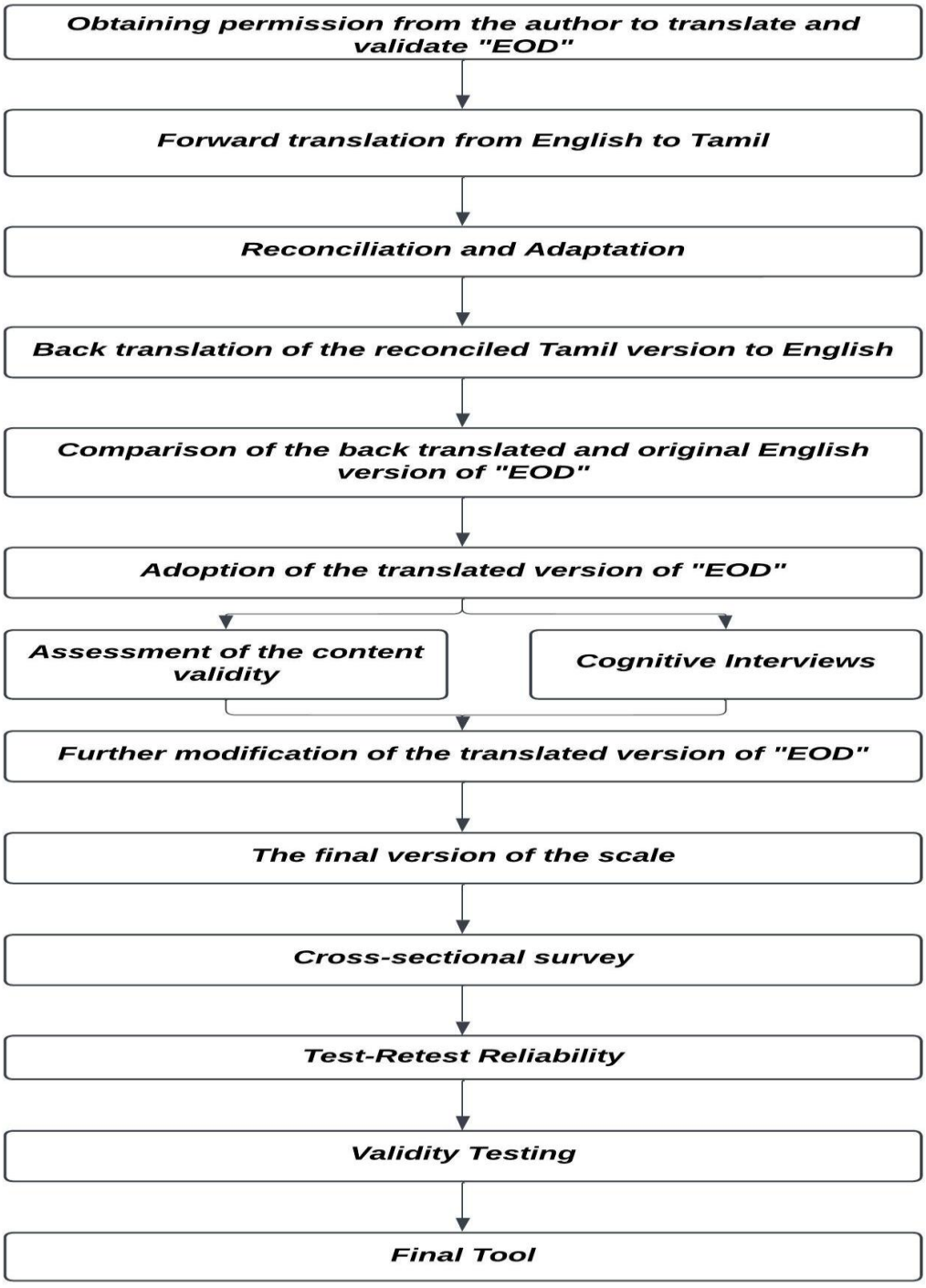


Figure 3: Steps to Translate and Validate the Scale

Phase I: Translation and Validation phase of the EOD Scale for Sanitation Workers

Stage 1 – Selection of the EOD Scale

The Experiences of Discrimination (EOD) Scale was chosen for this study to assess the discrimination experienced by sanitation workers. The EOD scale was selected due to its relevance in capturing experiences of discrimination.

3.1.2 Initial Preparation

Formal approval was obtained from the original author(s) of the Experiences of Discrimination (EOD) Scale for its use and translation into Tamil. The author(s) were contacted to ensure that the scale could be translated and applied to sanitation workers in the context of discrimination.

3.1.3 Forward Translation

The EOD scale is translated from English to Tamil by two independent translators. These translators worked separately to avoid influencing each other's work, ensuring that multiple perspectives were considered in translating the scale, resulting in a more accurate and culturally appropriate translation.

3.1.4 Reconciliation and Adaptation

After the two forward translations are complete, a reconciliation of any differences. This process involved an item-by-item review to ensure that the Tamil translations captured the original meanings of the English items. This step ensures consistency and adaptation for cultural relevance **Version 1**(see appendix)

3.1.5 Back Translation

The reconciled Tamil **version 1** is then translated back into English by two independent bilingual translators who have not seen the original English scale. This back-translation

helped identify any discrepancies in meaning or interpretation between the original and translated versions. This process ensures the accuracy of the translation.

Stage II- Adjustments were made to items through expert consultation and prioritization

3.1.6 Reconciliation and Adoption

This step involved comparing the back-translated English versions with the original English scale to see if any inconsistencies were addressed, and the Tamil version was refined accordingly. Once adjustments were made, the Tamil version was finalized for use in the study.

3.1.7 Expert Committee Review

A team of experts conducted a thorough review of the final Tamil **version 1** to ensure it was linguistically accurate and culturally relevant. They evaluated the clarity of the items and confirmed that the scale effectively captured the discrimination constructs. If new items were incorporated based on the experts' suggestions, this would result in **version 2**.

Methodology for Establishing Content Validity

Content validity is a critical aspect of ensuring that the measurement tools used in research accurately represent the construct being studied. It refers to the degree to which the elements of an assessment instrument (e.g., questionnaire items) are relevant to and representative of the targeted construct for a particular assessment purpose (Haynes et al., 1995; Yusoff, 2019). In this study, content validity was established through a systematic process involving expert review and the calculation of the Content Validity Index (CVI). This section outlines the methodology used to ensure the content validity of the research instrument, supported by evidence from reputable sources.

Step 1: Preparing the Content Validation Form

The first step in establishing content validity was to prepare a content validation form. This form included clear instructions for the expert reviewers, definitions of the domains being measured, and the items intended to represent those domains. The form also provided a rating scale for the experts to evaluate the relevance of each item. The rating scale used was a 4-point Likert scale, as recommended by (Davis, 1992; Polit et al., 2007) :

1 = Not relevant

2 = Somewhat relevant

3 = Quite relevant

4 = Highly relevant

This scale was chosen because it avoids a neutral midpoint, forcing reviewers to make a clear judgment about the relevance of each item (Lynn, 1986).

Step 2: Selecting the Review Panel of Experts

The selection of experts is crucial for ensuring the credibility of the content validation process. The review panel consisted of individuals with expertise in the topic area, including academic researchers and practitioners with relevant experience. The number of experts selected was based on recommendations from the literature. Polit and Beck (2006) suggest that a minimum of six experts is sufficient for content validation, while Lynn (1986) advised a minimum of three experts but indicated that more than 10 was probably unnecessary. In this study, four experts were selected to ensure a balance between diversity of perspectives and manageability of the review process.

Step 3: Conducting the Content Validation

The content validation process was conducted using a non-face-to-face approach, where the content validation form was sent to the experts via email. This approach was chosen for its efficiency and cost-effectiveness, as it allowed experts to complete the review at their convenience. Clear instructions were provided to ensure that the experts understood the task and the rating scale.

Step 4: Reviewing Domains and Items

The experts were asked to critically review the domains and items in the questionnaire. Each domain was accompanied by a clear definition to guide the experts in their evaluation. The experts were encouraged to provide qualitative feedback on the relevance of each item to the domain it was intended to measure. This feedback was used to refine the items and ensure that they accurately represented the construct.

Step 5: Scoring the Items

After reviewing the domains and items, the experts independently scored each item using the 4-point relevance scale. The scores were collected and compiled for analysis. The relevance ratings were then recoded into a binary format, where ratings of 3 (quite relevant) and 4 (highly relevant) were considered relevant (1), and ratings of 1 (not relevant) and 2 (somewhat relevant) were considered not relevant (0). This dichotomization is a common practice in content validity studies (Polit and Beck, 2006).

Step 6: Calculating the Content Validity Index (CVI)

The CVI was calculated at both the item level (I-CVI) and the scale level (S-CVI). The I-CVI represents the proportion of experts who rated an item as relevant (i.e., scored 3 or 4). The S-CVI was calculated using two methods:

S-CVI/Ave (Average Method): This method calculates the average of the I-CVIs across all items in the scale.

S-CVI/UA (Universal Agreement Method): This method calculates the proportion of items that achieved a relevance rating of 3 or 4 by all experts.

The formulas for calculating the CVI indices are as follows:

I-CVI = (Number of experts who rated the item as relevant) / (Total number of experts)

S-CVI/Ave = (Sum of I-CVIs) / (Total number of items)

S-CVI/UA = (Number of items rated as relevant by all experts) / (Total number of items)

Step 7: Establishing Acceptable CVI Thresholds

The acceptable thresholds for the CVI were based on recommendations from the literature. For I-CVI, Polit and Beck (2006) suggest that:

With 3 to 5 experts, the I-CVI should be 1.00 (i.e., all experts must agree on the item's relevance).

With 6 or more experts, the I-CVI should be at least 0.78 (i.e., at least 78% of the experts agree on the relevance of the item).

For S-CVI/Ave, a threshold of 0.90 is recommended (Polit et al., 2007; Polit and Beck, 2006), while for S-CVI/UA, a threshold of 0.80 is considered acceptable (Davis, 1992).

Step 8: Refining the Instrument Based on Expert Feedback

After calculating the CVI, items that did not meet the acceptable thresholds were revised or removed based on the qualitative feedback provided by the experts. This iterative process ensured that the final instrument had strong content validity.

Step 9: Adjusting for Chance Agreement Using Modified Kappa (K*)

To further refine the content validity assessment and account for the possibility of chance agreement among experts, the probability of chance agreement (Pc) and the modified kappa (K)* were calculated. This step ensures that the relevance of items is not inflated by random agreement among experts. The formulas used for these calculations are based on Polit et al. (2007):

Probability of Chance Agreement (Pc):

The probability of chance agreement was calculated to determine the likelihood that experts might agree on the relevance of an item purely by chance. This was done using the formula

$$〚Pc=0.5〛^N$$

Where N = Number of experts.

Modified Kappa (K)

The modified kappa statistic was calculated to adjust the Item-Level Content Validity Index (I-CVI) for chance agreement. The formula for modified kappa is

$$k^*=(I\text{-}CVI\text{-}PC)/(1\text{-}PC)$$

This adjustment provides a more accurate measure of content validity by accounting for the probability of chance agreement.

Evaluation criteria for kappa:

Fair = k of 0.40 to 0.59;

Good = k of 0.60– 0.74; and

Excellent = k > 0.74 (Cicchetti and Sparrow, 1981; Fleiss et al, 2003).

Step 10: Finalizing the Instrument

After calculating the I- CVI, S-CVI/Ave, S-CVI/UA, and modified kappa (K), the final step involved refining the instrument based on the results and expert feedback. Items that did not meet the acceptable thresholds for I-CVI (1.00 for 3–5 experts) or had a modified kappa below 0.74 were revised or removed.

Stage III - Cognitive Debriefing

3.1.8 Cognitive Interviewing

To test the comprehensibility of the translated scale, cognitive interviews were conducted with a small group from my target population (4-6 participants). To assess how well they understand the translated items and whether they interpret the questions as intended.

3.1.9 Pilot Testing

Pilot test the final translated version of the EOD scale with a small sample of my target population (around 10-15 sanitation workers). Ensuring that the scale was both reliable and valid for use in the target population.

3.1.10 Reliability

Reliability refers to the consistency of the scale's measurements. The test-retest reliability was evaluated by administering the scale to the identical subsample comprising 30 individuals on two occasions, at an interval of 14 days.

3.2 Study design

This is a quantitative cross-sectional survey to measure the mental health of sanitation workers and explore its relationship with self-reported discrimination. The research focuses on measuring the extent of negative emotional states - Depression, Anxiety, and Stress among sanitation workers using the Depression, Anxiety, and Stress Scale (DASS-21). It also involves translating the "Experiences of Discrimination" (EOD) Scale into Tamil language and validating the translation in assessing the discrimination among sanitation workers.

3.3 Study setting

The study was conducted at the municipal corporation in the Dindigul district. The number of sanitation workers working here is 503.

3.4 Study Population

"Sanitation workers, who work in Dindigul municipal corporation including both permanent and temporary."

Inclusion criteria

Garbage collectors, street sweepers, and drainage cleaners who have worked in the area for more than 6 months.

Exclusion criteria

People who work in the treatment plant, railway cleaners, and individuals who do not wish to give consent.

3.5 Sampling process

3.5.1 Sample size estimation

According to a literature review (Garg and Kumar, 2019), the expected prevalence of negative emotions, depression is 17%, anxiety is 15%, and stress is 6% as measured by the DASS-21 tool in Class IV workers. We selected 17% as the anticipated proportion for depression because it is the highest among the mental health outcomes, and the relative precision is set at 20% of 17% (d=3.4%), which was applied, resulting in a sample size of 243 (as calculated by OpenEpi). To obtain 243 usable responses, accounting for an anticipated 10% non-response rate, we planned to reach out to 268 participants initially.

3.5.2 Sampling methods

The total number of sanitation workers employed by the Dindigul Municipal Corporation was identified to be 503. These workers' names were obtained from the Municipal Corporation and stratified into two subgroups: temporary workers (360) and permanent workers (143), based on their respective proportions in the total workforce. A stratified sampling method was used to ensure that both groups were adequately represented in the sample. The recruitment was carried out by the principal investigator, who obtained permission from the relevant authorities within the Municipal Corporation.

The calculated sample size was 243 workers, with 174 from the temporary workers' group and 69 from the permanent workers' group. To account for a potential 10% non-response rate, we planned to meet 192 temporary workers and 76 permanent workers. Simple random sampling was used to select participants from each group, ensuring that each worker had an equal chance of being included in the study. This sampling used R code to randomly select individuals proportionally from the stratified subgroups.

3.6 Data collection process

Data collection was conducted using a structured questionnaire in Tamil to gather information from sanitation workers in the Dindigul Municipal Corporation. After receiving permission from the relevant authorities, I visited the workers at their job sites and explained each question in Tamil to ensure clarity and understanding. Responses were collected immediately after their answers were provided.

3.7 Data Collection Instruments

A structured questionnaire schedule was developed in English and translated into Tamil. The information sheet will be explained in detail to each of the participants by the principal investigator. After clarification of their concerns and queries, they will be asked to sign the consent form. The different sections of the questionnaire schedule are as follows:

Section 1: Socio-demographic characteristics of the participant - This section covers the details regarding Name (optional), Age, Gender, Housing type, Caste, Religion, and Substance use.

Section 2: Depression, Anxiety, and Stress (DASS - 21) - This section captures depression, anxiety, and stress questionaries, each section has 7 questions, with 4 Likert scales (0, 1, 2, 3). The questionnaire was translated into Tamil for better understanding. A validated Tamil 19 version of the DASSY-21 was available and kept handy for participants to understand more easily (Alagarsamy et al., 2022).

Section 3: The EOD questionnaire is used to measure Self-Reported Discrimination. it has 2 sections; the first section contains 2 questions, and the second section contains 9 questions regarding various spaces in which discrimination could be experienced. The translation and validation of this tool is one of the objectives of this study.

I developed an ODK-based tool for data collection. This will minimize transcription and data entry-related errors.

3.8 Data entry and storage

To ensure privacy and confidentiality, sanitation workers' names will be collected solely for obtaining informed consent. Each participant will be assigned a unique identification number, which will be used in the questionnaire. Only the principal investigator and the guide will have access to identifiable information, and this information will be securely stored and kept confidential.

The unique IDs will be the only identifiers stored in the database, and all analyses will be conducted on de-identified datasets. Participants' data will remain strictly confidential and will only be used for research and publication purposes. No data will be shared with third parties.

All data will be securely stored on a password-protected laptop accessible only to the principal investigator and guide. Identifiable information will not appear in any reports, ensuring participants' privacy and confidentiality are upheld at every stage of the research.

3.9 Operational definition of variables based on Conceptual Framework

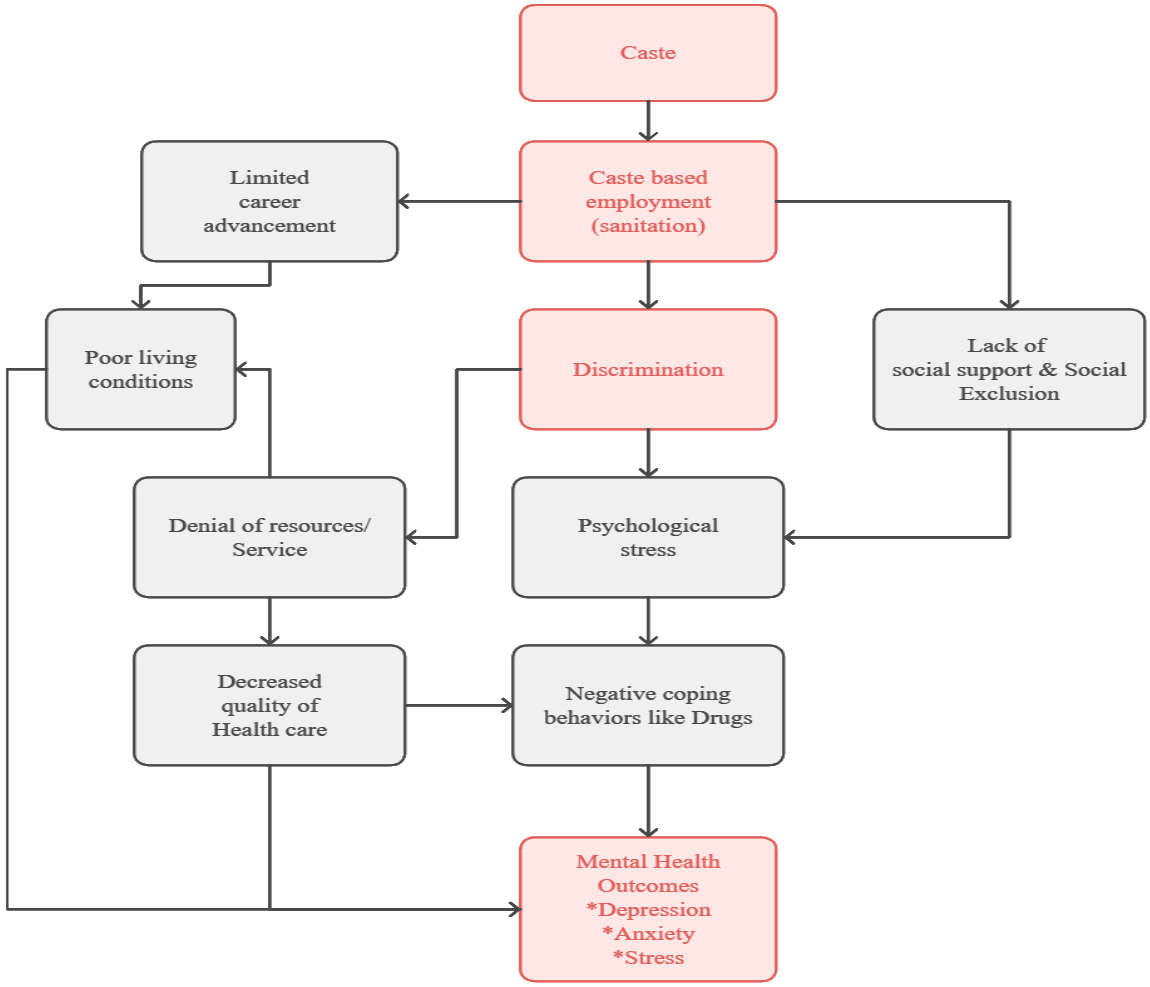


Figure 4: Variables Based on Conceptual Framework

The conceptual framework focuses on how caste and caste-based employment in sanitation, coupled with discrimination, impact the mental health of individuals.

Caste (Main Independent/Exposure Variable): The root cause identified in the diagram is the caste system, which influences many downstream effects. Individuals from marginalized castes are often funneled into caste-based employment in sanitation, a sector historically associated with lower-caste groups.

Caste-based Employment in Sanitation: Caste-linked occupations in sanitation serve as a direct pathway for discrimination. Individuals working in this sector are vulnerable to

unfair treatment, limited career advancement, and social exclusion due to their job roles being perceived as lower in status.

Discrimination: This framework highlights discrimination as a critical mediating factor. Discrimination due to caste and occupation leads to psychological stress and other negative experiences, such as denial of resources/services and social exclusion.

Pathways from Discrimination to Mental Health

Psychological Stress: Discrimination causes stress, which affects mental well-being.

Lack of Social Support & Social Exclusion: Isolation and a lack of a support system compound psychological stress.

Poor Living Conditions and Denial of Resources/Services: These factors worsen overall quality of life, further increasing stress.

Negative Coping Behaviors (e.g., Drug Use): Psychological stress may lead individuals to resort to unhealthy coping mechanisms.

Outcome Variables (Main Dependent Variables): The downstream effects culminate in mental health outcomes:

Depression

Anxiety

Stress

3.10 Construction of Variables

Caste-Based-Discrimination

The exposure variable, caste-based discrimination, was constructed from participant responses to the translated Tamil version of the Experiences of Discrimination (EOD) tool

(see Figure 4 for how Discrimination affects mental health and Annexure **Version 3** for the full scale). The EOD consists of 9 items assessing discrimination across various social domains. Each item was coded as 0 = "No" and 1 = "Yes." The responses were summed to generate a continuous total discrimination score (range: 0 to 9), with higher scores reflecting greater experiences of caste-based discrimination.

In addition to assessing experiences of discrimination and emotional distress, the study also explores two related concepts: (1) *the hereditary nature of sanitation work* — whether participants' family histories show patterns of occupational inheritance, and (2) *the desire to leave the job* — participants' intentions or aspirations to shift away from sanitation work. These dimensions will be analyzed to provide a more comprehensive understanding of the social and emotional factors influencing the lives of sanitation workers."

Depression, Anxiety, and Stress

The DASS-21 consists of 21 negatively worded statements, with seven items each measuring depression, anxiety, and stress. Responses were recorded on a four-point Likert scale: 0 (‘Did not apply to me at all’), 1 (‘Applied to me to some degree, or some of the time’), 2 (‘Applied to me to a considerable degree, or a good part of the time’), and 3 (‘Applied to me very much, or most of the time’). To calculate the final score, the raw scores were summed and multiplied by 2. The total final score for each subscale was used to determine the levels of stress, depression, and anxiety experienced by the participants.

Cutoff scores of DASS 21

	Depression	**Anxiety**	**Stress**
Normal	0-9	0-7	0-14
Mild	10-13	8-9	15-18
Moderate	14-20	10-14	19-25
Severe	21-27	15-19	26-33
Extremely Severe	28+	20+	34+

Table3. 1: Cutoff scores of DASS 21

3:11 Conceptual Framework for Developing Questions Related to Occupational Discrimination in the Sanitation Sector

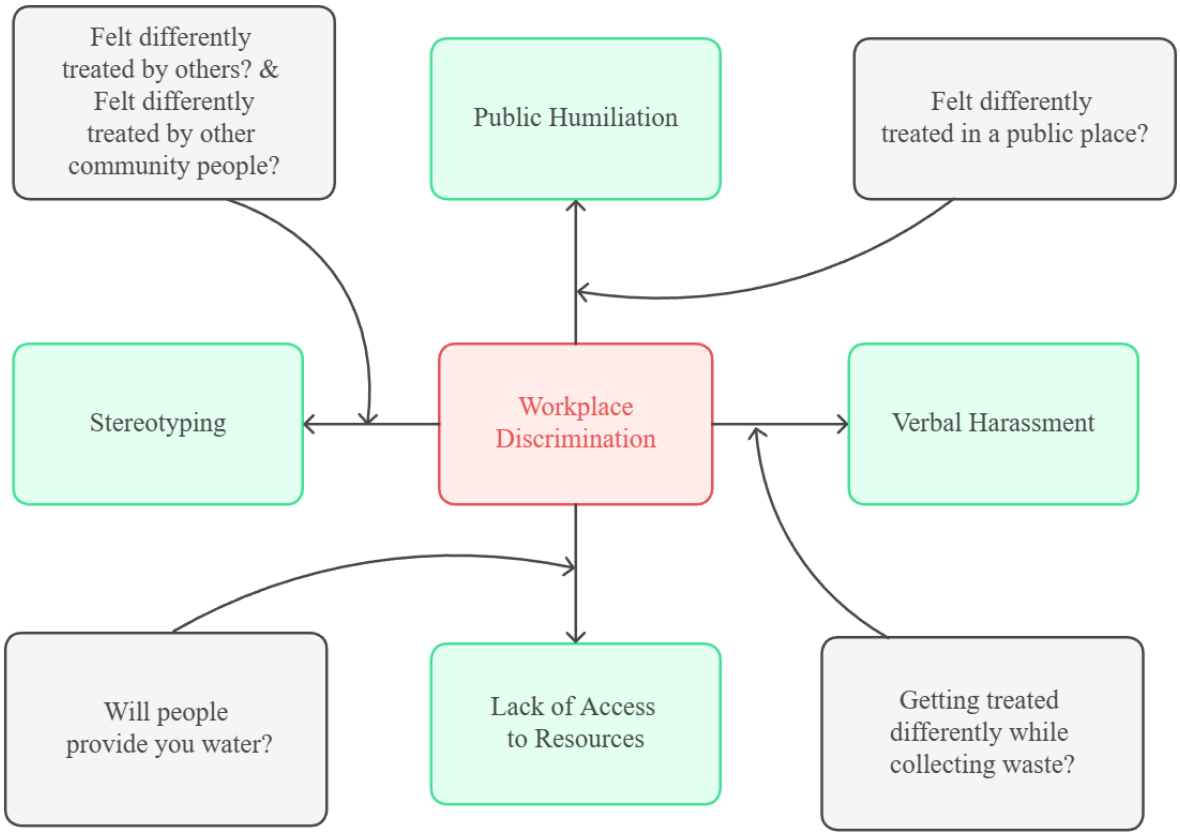


Figure 5: Conceptual Framework for Occupational Discrimination

The purpose of this framework for developing the questions is to explore the experiences of individuals working in the sanitation environment, focusing on four key dimensions: Public Humiliation, Stereotyping, Verbal Harassment, and Lack of Access to Resources. The framework is designed to capture the nuanced realities sanitation workers face through a series of targeted questions.

Data Collection

Data was collected using these questions, which encapsulate various scenarios and questions relevant to the sanitation sector. Participants were asked to reflect on the following dimensions:

1. Verbal Harassment
    - The dimension of Verbal Harassment was assessed with the question "Getting treated differently while collecting waste?" to identify instances of unfair treatment.
    - Reference: Question 3 on page 101.
2. Lack of Access to Resources
    - Access to basic needs was examined through questions such as "Lack of Access to Resources?" and "Will people provide you water?" to highlight resource disparities.
    - Reference: Question 3.1 on page 101.
3. Public Humiliation
    - Questions such as "Felt differently treated in a public place?" were used to gauge experiences of public humiliation.
    - Reference: Question 3.4 on page 102.

4. Stereotyping

    - Workplace dynamics were explored through questions like "Felt differently treated by other community people?" and "Felt differently treated by others?" to understand the impact of stereotyping and differential treatment in the sanitation sector."
    - Reference: Question 3.3, 3.5 on page 102.

3.12 Data Analysis

The principal investigator himself will be doing the data collection and analysis. Informed consent will be taken. A structured interview schedule will be used to gather information on demographic details. Data will be collected using the DASS 21 and Experience of Discrimination (EOD) scale. The PI will convert the questionnaire and tools into the ODK platform to ensure the minimization of errors during data entry.

After data collection, R version 4.3.3 was used for data analysis. The analysis followed these steps:

Continuous variables will be described using mean and standard deviation, and categorical variables will be described using frequency and percentages.

I used Pearson correlation to explore the relationship between Self-reported discrimination and overall mental health and individual dimensions of the same.

Bivariate Logistic Regression Models were run for each Depression, Anxiety, and Stress with each predictor variable (e.g., heredity, Caste discrimination, and Occupational discrimination) to identify potential associations.

Collinearity Check—To ensure the validity of the models, Multicollinearity was assessed using correlation matrices and Generalized Variance Inflation Factor (GVIF) values.

Multivariable Binary Logistic Regression Models -Statistically significant variables from the bivariate analysis were included in multivariable binary logistic regression models to assess their adjusted effect on Depression, Anxiety, and Stress.

The final model was selected using both forward and backward stepwise regression, based on the model with the lowest AIC value.

The findings will be interpreted and presented in tables, graphs, and charts.

3.13 Ethical considerations

The study will only proceed after receiving approval from the Institutional Ethics Committee of Sree Chitra Tirunal Institute for Medical Sciences and Technology and the commissioner of Dindigul Municipal Corporation. **SCT/IEC/2325/DECEMBER-2024** (see annexure). Participants will be informed regarding the voluntary nature of the participation, study objectives, and the potential benefits and risks of the participation. Written informed consent will be obtained from all participants before enrolling them in the study. Participation in the study is completely voluntary, and participants are free and have the right to withdraw at any time during the study without any explanation or consequence. Utmost priority will be given to protecting the privacy and confidentiality of the participants, and the collected information will not be shared with anyone not involved in the study. At no stage will the identity of the participant be revealed. All soft copies of the questionnaire will be deemed destroyed when no longer needed or after one year of the dissertation report submission, whichever comes first. The participant will also be given a chance to ask any questions, queries, or doubts related to the study.

CHAPTER 4

RESULT - PHASE ONE

This study was carried out in two parts. **Phase one** involved the translation and validation of the Experience of Discrimination Scale (EOD) into Tamil. The EOD scale was originally developed to assess self-reported discrimination on the basis of Race. Thus, in addition to the translation and validation of the tool's psychometric properties, I also needed to validate it to measure caste-based discrimination. This involved several steps, including forward translation, back translation, assessment of content validity using expert ratings, cognitive debriefing to evaluate clarity and understanding of the scale, and evaluation of reliability through internal consistency and test-retest reliability as described previously in the Methods section (Chapter 3).

Phase two is an analysis based on a survey that aimed to estimate the "Extent of negative emotional state - Depression, Anxiety, and Stress among sanitation workers of the Dindigul Municipal Corporation and determine the factors associated with these mental health outcomes, including self-reported discrimination".

4.1 Summary of Content Validity Assessment

An assessment of content validity was conducted as described in the Methodology section, following the set choices recommended by Davis (1992). All items were rated using a 4-point Likert scale (4 = highly relevant, 3 = quite relevant, 2 = somewhat relevant, 1 = not relevant). Items rated by experts at 4 or 3 were considered relevant, while ratings of 2 and 1 were not relevant. Each item had an associated item-level content validity index (I-CVI). For the experts panel of four, the minimum acceptable I-CVI was set at 1.00. Items with an I- CVI < 1.0 were discarded. Also, the experts provided some minor recommendations

about specific items, and those were included. Two items were revised (i.e., item numbers 8 and 9 in the section identifying discrimination), and new items were added following the recommendations provided by the experts, **Version 2** (See Appendix). Additionally, based on feedback from pilot study participants regarding Domain One, specifically Items 1 and 2 under "Response to Unfair Treatment," **Version 3,** the newly incorporated items underwent a subsequent round of expert evaluation. The newly added items were re-rated by experts.

As per Polit et al. (2007) and Polit and Beck (2006), the probability of chance agreement for the items ranged from 0.063 to 0.25. The modified kappa values ranged from 0.67 to 1.00, exceeding the threshold of 0.74 to be considered excellent, as described by Cicchetti and Sparrow (1981) and Fleiss (1981). The scale-level content validity index (S-CVI) was calculated using the Average method described in the Methodology section. The S-CVI/Ave for the scale was 1.00, which is well above the acceptable limit of 0.90 or higher, as recommended by Waltz et al. (2005) and Waltz et al. (2016). (see Table 3.1) None of the items in the scale was removed as I-CVI was well above the acceptable level for each item.

Table 4.1: The relevance rating by four experts on the items of "Experience of Discrimination"

Items		Exp 1	Exp 2	Exp 3	Exp 4	I-CVI	P_c	K	Evaluation
						a	b	c	d
Response to unfair treatment	Q1	4	4	3	4	1	.063	1	Excellent
	Q2	4	4	3	4	1	.063	1	Excellent
Discrimination	Q1	4	4	4	4	1	.063	1	Excellent
	Q2	4	4	4	4	1	.063	1	Excellent
	Q3	4	4	4	4	1	.063	1	Excellent
	Q4	4	4	4	4	1	.063	1	Excellent
	Q5	4	4	4	4	1	.063	1	Excellent
	Q6	4	4	4	4	1	.063	1	Excellent
	Q7	4	4	4	4	1	.063	1	Excellent
	Q8	3	4	4	4	1	.063	1	Excellent
	Q9	3	4	4	4	1	.063	1	Excellent
Proportion relevance		1	1	1	1				
The average proportion of items judged as relevant across four experts = 1.00									
Scale-Content Validity Index by Average method, S-CVI/Ave = 1.00									

Table 4. 1: The relevance rating by four experts on the items of "Experience of Discrimination"

[a] I-CVI, item-level content validity index, [b] P_c, probability of chance agreement, [c] K = modified kappa value on the relevance, [d] Evaluation criteria for kappa: Fair = k of 0.40 to 0.59; Good = k of 0.60– 0.74; and Excellent = k > 0.74(Cicchetti and Sparrow, 1981; Fleiss et al., 2003).

Table 4.2: Profile of experts involved in the translation process:

Steps in the translation process	Members	Description
Forward translation	Expert A	Male, NGO leader, worked on health inequity, rights, and social justice, writer, 20 years' experience.
	Expert B	Male, Independent artist, involved in health and social justice movements, 10 years' experience
Backward translation	Expert C	Female – Medical Doctor, researching health inequity, 10 years' experience
	Expert D	Female – Medical Doctor, artist, writer, working on health and social justice, 5 years' experience
Content validity by experts	Expert E	Female, Rural NGO, field worker, 5 years' experience

	Expert F	Female, Rural NGO, Field worker, 30 years' experience
	Expert G	Female – Social Scientist, broad area of research on inequity and exclusion, 10 years' experience
	Expert H	Male – Rural NGO, Human Rights, social justice, 30 years' experience

Table 4. 2: Profile of experts involved in the translation process:

- It was ensured that there was a representation of individuals from historically marginalized groups – of the 8 individuals, 6 belong to such groups.
- It was ensured that all translators were highly proficient in both English and Tamil.
- It was ensured that all those assessing content had extensive experience in the field, working on issues of exclusion and discrimination, and included those with formal academic training.

Table 4.3: Suggestions Given by the Experts:

Experts	Suggestions
Expert E	Change the word **"***எதிராக*" to "*பதிலாக*" in section2 in stem column
Expert F	Nil
Expert G	Change the word "*தயவுகூர்ந்து*" in section 1 for both the question & put the local colonial word or remove the word
Expert H	In the "Discrimination" section in question 8, we have to add "*கோவில்களில்*," and in question 9, we have to add "*கிராம சபை கூட்டத்தில்.*"

Table 4. 3: Suggestions given by the Experts

4.2 Summary of Cognitive Interviews and Pilot Survey

Cognitive interviews were used to assess the linguistic appropriateness, cultural relevance, and comprehension of survey items. In this sample, five of the sanitation workers (three

men and two women) were over the age of 40. Four of the included participants had education to at least secondary level, whereas one had no formal education.

The other participant never received any formal education, by design, so my survey was accessible to a range of educational backgrounds, including those without formal schooling. The experience of each of the respondents was more than three years in the sanitation sector, making them relevant for the study.

The key insights gained from the interviews concerned the interpretation of specific terms in the survey. Notably:

- Unfairly (*நியாயமற்ற*): Three participants considered this term as difficult to comprehend and suggested that it be replaced by the term "*ஏற்றத்தாழ் வாக*," which was felt to be more appropriate.
- One participant found the phrase unclear: Do you usually (*எதிர்பாதிப்புாவது*): The alternative it suggested, "*எதிர் கருத்து தெரிவிப்பீர்கள்*," was seen as more widely understandable and reflectful of context.

On the contrary, two respondents reported that all terms in the survey were relevant and easy to understand.

Specific findings and further feedback are detailed in **Version 3**

4.3 Internal Consistency Reliability

The reliability of the scale was evaluated using Cronbach's alpha and test-retest reliability. The internal consistency of the items in each domain was calculated. As this would lower the overall alpha of the subscale, no items were deleted from the scales.

The Kuder-Richardson formula 20 (typically abbreviated to KR-20) is a special case of alpha for binary items. When test items are dichotomous, KR-20 and coefficient alpha are the same.

4.4 Test-Retest Reliability

Measurement data reliability is one of the key points for any research or clinical purpose because it ensures the same result can be achieved again at a moment in time. Intraclass correlation coefficient (ICC) is a commonly employed statistical method to determine test-retest reliability, which assesses the agreement of measurements using the same rater or instrument in the same environment at different time points (Koo and Li, 2016). E.g., Koo and Li (2016) point out that the ICC is most informative in that it indicates the extent of correlation and agreement between repeated measurements and is therefore particularly relevant to test-retest reliability studies. They suggest that a two-way mixed-effects model with an absolute agreement definition be generated to assess test-retest reliability studies; this model is most appropriate when the repeated measurements are not assumed to represent random samples. Moreover, they advise on interpreting ICC values with regard to their 95% confidence intervals (Koo and Li, 2016).

Wilcoxon Signed-Rank Test → A non-parametric test comparing repeated measures based on non-parametric data to check if there's a significant difference between the two responses from the same dataset with half the time duration.

Table 4.4 Characteristics of the scale -Reliability

Items	Content of the items	Alpha if the item is removed	ICC (3,1) Single fixed raters	ICC p-value	Wilcoxon signed-rank test P value
Measure	**Response to unfair treatment**				
1	If you feel you have been treated unfairly, do you usually	0.60	0.88 (0.80-0.93)	< 0.001	0.149
2	If you have been treated unfairly, do you usually	0.62	0.89 (0.81-0.93)	< 0.001	0.149
			Kuder-Richardson formula 20—or KR-20 = 0.76		
Measure	**Discrimination**				
1	Have you ever experienced discrimination, at school, been prevented from doing something, or been hassled or made to feel inferior in any of the following situations because of your caste?	0.92	0.96 (0.93-0.98)	< 0.001	1.00
2	Have you ever experienced discrimination, getting hired or getting job been prevented from doing something, or been hassled or made to feel inferior in any of the following situations because of your caste?	0.93	0.84 (0.73-0.91)	< 0.001	0.346
3	Have you ever experienced discrimination, at work been prevented from doing something, or been hassled or made to feel inferior in any of the following situations because of your caste?	0.89	0.92 (0.86-0.95)	< 0.001	1.00
4	Have you ever experienced discrimination, getting housing been prevented from doing something, or been hassled or made to	0.90	0.88 (0.80-0.93)	< 0.001	0.149

	feel inferior in any of the following situations because of your caste?				
5	Have you ever experienced discrimination, getting medical care been prevented from doing something, or been hassled or made to feel inferior in any of the following situations because of your caste?	0.89	0.82 (0.70-0.89)	< 0.001	1.00
6	Have you ever experienced discrimination, getting service in a store or restaurant been prevented from doing something, or been hassled or made to feel inferior in any of the following situations because of your caste?	0.89	0.88 (0.80-0.93)	< 0.001	0.149
7	Have you ever experienced discrimination, getting credit bank loans or mortgage being prevented from doing something, or being hassled or made to feel inferior in any of the following situations because of your caste?	0.89	0.92 (0.86-0.95)	< 0.001	0.346
8	Have you ever experienced discrimination, On the street or in a public setting been prevented from doing something, or been hassled or made to feel inferior in any of the following situations because of your caste?	0.89	0.84 (0.73-0.91)	< 0.001	1.000
9	Have you ever experienced discrimination, from the police or in the courts (or) village grama sabkha been prevented from doing something, or been hassled	0.89	0.88 (0.80-0.93)	< 0.001	0.149

	or made to feel inferior in any of the following situations because of your caste?	
		Kuder-Richardson formula 20—or KR-20 = 0.91

Table 4. 4: Characteristics of the scale -Reliability

All the questions are taken from (Krieger et al., 2005)

(Koo & Li, 2016) ICC values less than 0.5 indicate poor reliability, values between 0.5 and 0.75 indicate moderate reliability, values between 0.75 and 0.9 indicate good reliability, and values greater than 0.90 indicate excellent reliability.

4.5 Interpretation of Characteristics of the Scale -Reliability

Response to Unfair Treatment:

The two items measuring reactions to unfair treatment were adequately reliable (ICC = 0.88 and 0.89). This means that participants responded similarly at each testing point, supporting the notion that the items consistently assess how a person reacts to unfair treatment.

Discrimination Experiences:

The items that examined experiences of discrimination across different contexts (e.g., school, work, housing, medical care, etc.) had good to excellent reliability (all ICC values: 0.82–0.96). For example:

Discrimination at school (ICC = 0.96) and access to credit or loans (ICC = 0.92) showed excellent reliability.

Reliability was good for discrimination in public settings (ICC = 0.84) and medical care (ICC = 0.82).

Statistical Significance:

All ICCs were statistically significant ($p < 0.001$), suggesting that our reliability estimation was not due to random variation.

RESULT – PHASE TWO

The study participants were recruited from the sanitation workforce of the Dindigul Municipal Corporation with written approval from municipal authorities. The data for this study were collected in person, by me, at the sanitation workers' job sites at their convenience. From the sampling frame, I had to approach 246 workers to reach my target of 243 sanitation workers. Of the three workers I approached who were not included, 2 were temporary workers who fell outside of the inclusion criteria, and 1 was a permanent worker who did not want to be included. This chapter focuses on the descriptive results of key variables, including demographics of the study participants and their experiences of discrimination, as well as the Extent of negative emotional states - depression, anxiety, and stress. It also explores the relationship between experiences of discrimination and depression, anxiety, and stress among the participants.

4.6 Background details of the study participants

In Dindigul Municipal Corporation, there are a total of 503 sanitation workers on their rolls. Of these, there were 360 temporary workers and 143 permanent workers; our final sample involved 243 sanitation workers drawn from this list. Including both temporary and permanent roles enabled comprehensive analyses of participants' sociodemographic characteristics and their working conditions, as well as work relations. In the subsequent tables, I present the age spectrum, gender, educational level, social status, sub-caste, religion, present jobs, parental or grandparent occupational history, and coping patterns. These are presented in **Tables 4.5, 4.6 & 4.7.**

Table 4.5 Type of employment of workers in the sample

Employment Status	Frequency N = 243 (%)
Permanent	69 (28.4)
Temporary	174 (71.6)

Table 4. 5:Type of employment of workers in the sample

Table 4.6 Socio-demographic characteristics of participants (N = 243)

Category	Variable	Frequency (%) N = 243
Gender	Female	76 (31.3)
	Male	167 (68.7)
Education	No formal education	66 (27.2)
	Primary	61 (25.1)
	Secondary	107 (44.0)
	Higher Secondary	4 (1.6)
	Diploma	5 (2.1)
Housing	Own	92 (37.9)
	Rent	136 (56.0)
	Government	15 (6.2)
Household size		4 (2)
Given colour of ration card for BPL (Green)		243 (100)
Religion	Hinduism	240 (98.8)
	Christianity	1 (0.4)
	Islam	1 (0.4)
	Unwilling to reveal	1 (0.4)
Social Category	SC	239 (98.4)
	BC	2 (0.8)
	Unwilling to reveal	2 (0.8)
Sub Caste	Sakiliyar (SC)	231 (95.1)
	Pallar (SC)	5 (2.1)
	Koravar (SC)	2 (0.8)
	Gounder (BC)	1 (0.4)
	Paraiyar (SC)	1 (0.4)
	Vanniyar (BC)	1 (0.4)
	Unwilling to reveal	2 (0.8)

Table 4. 6: Socio-demographic characteristics of participants (N = 243)

Table 4.7 Mean and Standard Deviation of Study Variables (N = 243)

Category	Mean	Standard Deviation (SD)
Age	44	(±9)
Household size	4	(±2)
Years worked as a permanent	16	(±11)
Years worked as a temporary	12	(±9)

Table 4. 7: Mean and Standard Deviation of Study Variables (N = 243)

The majority of respondents were male (167 [68.7%]), while 76 (31.3%) were female.

In terms of education level, 66 (27.2%) had no education background, and 61 (25.1%) had completed primary education. The majority of the respondents, 107 (44%), were secondary educated compared to only 4 (1.6%) who had higher secondary education and 5 (2.1%), who had a diploma. Thus, a mere 3.7% of the sample studied beyond High school.

Demographics regarding housing conditions of 243 participants revealed 92 (37.9%) were homeowners, 136 (56%) were in rented accommodation, and 15 (6.2%) were provided accommodation by the government.

Importantly, all the participants held a green ration card, which in TamilNadu signified that they were below the poverty line.

Most of the respondents (n=240, 98.8%) were Hindus.

Social categorization - 239 (98·4%) belonged to the Scheduled Caste (SC) category, 2 (0·8%) identified as Backward Caste (BC), and 2 (0·8%) did not disclose their social category. The sub-caste distribution was found to be Sakiliyar 231 (95.1%), Pallar 5 (2.1%), Koravar 2 (0.8%), Gounder 1 (0.4%), Paraiyar 1 (0.4%), and Vanniyar 1 (0.4%). Of these the Sakiliyar, Pallar, Parayar are part of the broader Scheduled Caste communities. Furthermore, 2 (0.8%) individuals chose to conceal their sub-caste.

The average age of the participants was 44 years old (SD = ±9). The median number of household members was 4 (SD = ±2). The participants reported an average of 16 years (SD = ±11) of permanent employment and 12 years (SD = ±9) of temporary employment in sanitation work.

Table 4.8 Intergenerational Occupational Patterns and Employment Factors Among Sanitation Workers (N = 243)

Category	Variable	Frequency (%) N = 243
Parent Occupation	Sanitation work	156 (64.2)
	Other	87 (35.8)
Details of Parent Occupation among those Listed as "Others" (N = 87)	Wage laborer	39 (44.8)
	Former	19 (21.8)
	Load man	13 (14.9)
	Cobbler	10 (11.5)
	Rickshaw driver	6 (6.9)
Grandparent Occupation	Sanitation work	164 (67.5)
	Cannot recall	14 (5.8)
	Other	65 (26.7)
Details of Grandparent Occupation among those Listed as "Others" (N = 65)	Wage laborer	21 (32.3)
	Former	13 (20.0)
	Load man	16 (24.6)
	Cobbler	11 (16.9)
	Rickshaw driver	4 (6.2)
Reason for employment	Family tradition	181 (74.5)
	Socioeconomic status	49 (20.2)
	Region	13 (5.3)
Background determined this job	No	74 (30.5)
	Yes	169 (69.5)
Will you choose other jobs if given a chance?	No	81 (33.3)
	Yes	162 (66.7)
If yes, the reason for choosing another job N = (162)	Freedom from the present job	78 (48.1)
	For better recognition	53 (32.7)
	Break the tradition	31 (19.1)
If "no" to choosing another job if given a chance N = (81)	Profession becomes habitual	28 (34.6)
	My fate	28 (34.6)
	No Opportunities	24 (29.6)
	Fear of Discrimination	1 (1.2)

Table 4. 8: Intergenerational Occupational Patterns and Employment Factors Among Sanitation Workers (N = 243)

As part of the survey, I also attempted to measure the extent to which sanitation work was an intergenerational phenomenon. This is especially due to its close connection with caste.

A sizable portion of respondents (156 [64.2%]) reported that their parents were working in sanitation, consistent with intergenerational occupational trends. Of those whose parents

reported non-sanitation-related work, the most common occupations were wage laborers 39 (44.8%), farmers 19 (21.8%), load men 13 (14.9%), cobblers 10 (11.5%), and rickshaw drivers 6 (6.9%). Thus, it can be seen that none of the parents of the current sanitation workers held secure jobs.

The trend was similar for enquiries regarding grandparental occupations, where 164 (67.5%) reported that their grandparents had worked in sanitation, while 14 (5.8%) were unable to recall. Of those reporting non-sanitation-related work, the common occupations included wage laborers 21 (32.3%), farmers 13 (20%), load men 16 (24.6%), cobblers 11 (16.9%), and rickshaw drivers 4 (6.2%). As with the parents, it can be seen that among the grandparents too none had held secure jobs.

Among the 243 participants, a full 49.8% of them reported that both their grandparents and parents held sanitation jobs. These figures clearly show the extent of inter-generational concentration that occurs with sanitation work, revealing the caste-based nature of this job. Further, the almost universal involvement in insecure/unorganized work over two generations among those not reporting sanitation work reveals the extent of poverty and precarity in this community.

In the survey, I also explored the motivation of the workers to seek employment in the sanitation sector, as well as tried to explore their satisfaction with and attempts to find alternative employment. This was especially given the stigmatized nature of sanitation work in India. Employment motivations were reported as being influenced by family tradition 181 (74.5%), followed by socioeconomic status 49 (20.2%) and regional factors 13 (5.3%). A significant proportion, 169 (69.5%), believed their background determined their occupational choice. These two clearly showed the extent to which individuals working in sanitation feel the link between their caste and sanitation work.

Of the 243 respondents, when asked whether they would change jobs if given the opportunity, 162 (66.7%) indicated that they would like to get alternative employment. Of those intending to change their job; 78 (48.1%) want freedom from the job, 53 (32.7%) wanted a better source of recognition and 31(19.1%) were in the search to break the tradition On the other hand, among those who chose to stay in sanitation, work as a professional habit 28 (34.6%), believing that this is their fate 28 (34.6%), non–availability of opportunities 24(29.6%) and fear of discrimination 1(1.2%) were cited as the reasons for not leaving the sanitation work.

This reveals the extent to which individuals from the Dalit community are literally trapped in sanitation work through a combination of poor education, poverty, and caste.

The next section of the results section explores the work that the participants were involved in and the discrimination they faced, if any, during their work.

Table 4.9 Occupational Roles (as defined by Dindigul Municipal Corporation) and Their Distribution Among Participants

Category	Variable	Frequency (%) N = 243
Current duties	Rotational	87 (35.8)
	Garbage collector	77 (31.7)
	Sweeper	63 (25.9)
	Drainage cleaners	16 (6.6)

Table 4. 9: Occupational Roles (as defined by Dindigul Municipal Corporation) and Their Distribution Among Participants

Among the current roles in their work, 87 (35.8%) were involved in rotational duties, followed by garbage collector 77 (31.7%), sweeper 63 (25.9%), and drainage cleaner 16 (6.6%), here I follow the classification of roles/duties of the Dindigul Municipal Corporation.

Table 4.10 Frequencies of Discriminatory Experiences in Public and Workplace Settings_ Occupational Discrimination

Category	Variable	Frequency (%) N = 243
Getting treated differently while collecting waste	No	95 (39.1)
	Yes	148 (60.9)
Willing to provide water	No	197 (81.1)
	Yes	46 (18.9)
Felt differently treated by others	No	95 (39.1)
	Yes	148 (60.9)
Felt differently treated in a public place	No	112 (46.1)
	Yes	131 (53.9)
Felt differently treated by other community people	No	51 (21.0)
	Yes	192 (79.0)

Table 4. 10: Frequencies of Discriminatory Experiences in Public and Workplace Settings_ Occupational Discrimination

Five variables were enumerated to measure the level of discrimination faced by these workers during their work life. This was based on Conceptual Framework for Developing Questions (Page no:38 and 39) and included: “Getting treated differently while collecting waste, Willing to provide water, Felt differently treated by others, Felt differently treated in a public place, and Felt differently treated by other community people”. Responses to these variables were coded as 'Yes' or 'No'. For four of these variables, ‘Yes’ was coded 1 and ‘No’ coded 0; except in Willing to provide water, where ‘No’ was coded 1 and ‘Yes’ coded 0. Scores of all five variables were summed for each participant. Exposure levels were classified into:

- High exposure: Score ≥ 3
- Moderate exposure: Score 1–2
- No exposure: Score = 0

Table 4.11 Occupational Discrimination reported by Occupational Role

Occupational discrimination	Drain cleaner N = 16	Garbage collector N = 77	Street Sweeper N = 63	Rotational N = 87	Frequency (%) N = 243
No exposure (Score = 0)	0 (0)	4 (5.2)	3 (4.8)	1 (1.1)	8 (3.3)
Moderate exposure (Score 1-2)	5 (31.3)	31 (40.3)	29 (46)	32 (36.8)	97 (39.9)
High exposure (Score ≥ 3)	11 (68.8)	42 (54.5)	31 (49.2)	54 (62.1)	138 (56.8)

Table 4. 11: Occupational Discrimination reported by Occupational role

There are brief descriptions of each job role in the sanitation sector and how they are exposed to discrimination (Table 4.11).

High Exposure (Score ≥ 3):

- Exposure to occupational discrimination was high among 56.8% (138/243) of the sanitation workers.
- For high exposure, only rotational workers had experienced high exposure 62.1%, and they were the ones subjected to frequent rotation to various sanitation jobs that were very discriminatory.
- Garbage collectors (54.5%) and street sweepers (49.2%) similarly reported high exposure, suggesting cross-cutting inequity exposure across sanitation roles.
- Drain cleaners (68.8%) had the largest single proportion, potentially due to their relative stigma by trade.

Moderate Exposure (Score 1–2):

- 39.9% (97 out of 243) of sanitation workers reported moderate discrimination.

- The highest proportion of moderate exposure was reported in street (46%) and garbage collectors (40.3%), suggesting that fixed sanitation workers are not free from discrimination either.

No Exposure (Score = 0):

- Only 3.3% (8 out of 243) had no exposure to discrimination, indicating that occupational discrimination is nearly universal among sanitation workers.
- Zero workers in the drain cleaner sector reported no exposure to discrimination, highlighting the steep stigma they endure.
- Among garbage collectors, the highest percentage of workers had exposure (5.2%).

I explored three specific behaviours related to health; one was how they coped with stress, and the other two were related to their use of addictive substances. The results for these questions are presented in Table 4.7

Table 4.12 Health-related Behaviours of the Participants

Category	Variable	Frequency (%) N = 243
Strategies to get out of stress (Open-ended Question)	Cry and keep it to myself	21 (8.6)
	Drinks	63 (25.9)
	Share with my family	22 (9.1)
	Pray to God	58 (23.9)
	Smoke cigarettes	26 (10.7)
	Spend time alone	30 (12.3)
	Talk to someone	23 (9.5)
Alcohol	No	92 (37.9)
	Yes	151 (62.1)
Tobacco	No	99 (40.7)
	Yes	144 (59.3)

Table 4. 12: Health-related Behaviours of the Participants

Coping Strategies for Stress

Sanitation workers used different strategies to cope with stress. The most commonly used strategies included consuming alcoholic beverages (25.9%) and praying to God (23.9%). A

significant number preferred being by themselves (12.3%) or smoking cigarettes (10.7%). Other coping strategies noted were talking to someone (9.5%), sharing the stress with relatives (9.1%), and crying and keeping emotions to themselves (8.6%). These results also indicate that a substantial portion of workers depend on substance use and withdrawal (not seeking out emotional support) to cope (57.5%), rather than discussing their pain with others.

Substance Use (Alcohol and Tobacco Consumption)

Among the sanitation workers, 62.1% had a history of alcohol use, and 37.9% had no history of alcohol use. Tobacco also had a high prevalence (59% were current smokers, and 40.7% were current non-smokers). The prevalence of alcohol and tobacco use as a coping mechanism could reflect restricted access to mental health services or the decision to rely on self-help strategies. Meanwhile, there is a significant reliance on religious practices (23.9%), emphasizing the importance of faith in managing stress. In contrast, the comparatively lower percentage of people who openly speak about their stress with family (9.1%) or others (9.5%) reflects that there might be possible barriers in seeking support from the social environment.

In the next section, I present the findings from my analysis of the EOD scale. Briefly, the EOD scale consists of two parts: The first part records whether the participant internalizes or externalizes the discrimination. The second part explores the experience of discrimination due to caste in a number of settings.

Table 4.13 Unfair treatment

Category	Variable	Frequency (%) N = 243
Accept or Act Unfair treatment		
	Accept as a fact of life	149 (61.3)
	Take action	94 (38.7)
Talk or Quit Unfair treatment		
	Keep to yourself	106 (43.6)
	Talk to others	137 (56.4)

Table 4. 13: Unfair treatment

Acceptance or Action to Unfair Treatment

The variable Accept Act represents how sanitation workers act in response to Unfair treatment. The results show that 61.3% of people accept Unfair treatment as a reality in life, as opposed to 38.7% who report that they will take action against it. These findings indicate that the majority of sanitation workers have internalized these experiences due to systemic barriers that prevent them from challenging injustices. Accepting Unfair treatment as a norm could stem from generational occupational marginalization, lack of legal protection, or fear of repercussions. A less prevalent group, workers who act against unfair treatment (38.7%), challenge mistreatment and take action against it. These individuals might be more aware of their rights, better positioned to access support systems, or simply may have the internal fortitude that galvanizes their demand for change.

Response to Unfair Treatment

The variable Talk Quit looks at whether sanitation workers talk about their concerns with others and what type of emotional support they seek. Based on data, the data indicates that the majority of people prefer to talk to another person about their struggles, at 56.4%, in comparison to only 43.6% of people who like to keep everything to themselves. The high

percentage of workers who stay silent points to the stigma around expressing distress and both cultural and workplace norms that discourage open conversation about our challenges.

On the other hand, 56.4% of those who converse with others may be more socially connected or simply more confident in expressing concern.

Based on the Response to unfair treatment, Nancy Krieger suggests that the participants who respond to the unfair treatment like the following:

Take action + talk to others = **Most "Active" response**

Take action + keep to self / Accept as a fact of life + talk to others = **Moderate response**

Accept as a fact of life + keep to self = **Most "Passive" response**

Category	Frequency (%) N = 243
Active response	17 (7.0)
Moderate response	197 (81.1)
Passive response	29 (11.9)

The above table presents participants' frequency and percentage distribution according to their response category. Out of 243 participants, a majority (81.1%) exhibited a **moderate response**. **Passive responses** were reported by 11.9% of the participants, while only 7.0% showed an **active response**.

This distribution indicates that most participants tended to respond moderately in the context assessed. The low percentage of active responses may suggest either limited empowerment

Table 4.14: Exposure to Discrimination Individual Variables

Category	Variable	Frequency (%) N = 243
At school	Yes	130 (53.5)
	No	113 (46.5)
Getting hired or getting a job	Yes	20 (8.2)
	No	223 (91.8)
At work	Yes	162 (66.7)
	No	81 (33.3)
Getting housing	Yes	166 (68.3)
	No	77 (31.7)
Getting medical care	Yes	169 (69.5)
	No	74 (30.5)
Getting service in-store or in a restaurant	Yes	166 (68.3)
	No	77 (31.7)
Getting credit bank loans or a mortgage	Yes	159 (65.4)
	No	84 (34.6)
On the street or in a public setting Eg, temple festivals	Yes	155 (63.8)
	No	88 (36.2)
Village council meeting (gramma sabha)	Yes	161 (66.3)
	No	82 (33.7)

Table 4. 14: Exposure to Discrimination Individual Variables

Cross-domain reported discrimination was assessed among sanitation workers using an assessment of lifetime experience and operational domain sectors (e.g., education, employment, housing, healthcare, public services, law enforcement) (Table 4.8.1). The results show that a large percentage of respondents faced discrimination in multiple areas of their lives.

Over half (53.5%) of respondents reported exposure to discrimination during their schooling years. 66.7% of respondents indicated workplace discrimination, underscoring the difficulties encountered in professional settings. Moreover, 68.3% of respondents reported discrimination in acquiring housing, suggesting systemic obstacles in obtaining proper accommodation.

Access to basic services was also a major concern. A total of 69.5 percent of respondents experienced discrimination in medical care, and 68.3 percent experienced discrimination when entering stores or restaurants. Likewise, financial hindrance was clear, with 65.4% experiencing discrimination while attempting to obtain credit.

Public spaces also presented a context for discrimination, with 63.8% of participants facing negative experiences on the street/in other public contexts. Also troubling were interactions with law enforcement and the justice system, with 66.3% of survey respondents reporting discrimination in village council meeting (gramma sabha).

However, respondents reported less discrimination in employment hiring, with just 8.2% of respondents experiencing it while seeking employment. This lower percentage may be explained by the fact that for many participants, sanitation work is a hereditary occupation. For example, when a parent retires from a permanent job, the job is often passed on to their children. This practice, while appearing routine, is also a form of structural discrimination, as it unknowingly traps individuals into the same line of work across generations.

These findings highlight the prevalence of discrimination across various aspects of sanitation workers' lives. With the high prevalence of discrimination occurring across essential services, employment, and law enforcement issues, it indicates that systemic issues need to be addressed and mitigated through effective policy measures to ensure social equity and inclusion.

As suggested by Krieger, the reported discrimination in multiple forums is added and the number of sites and the frequency of occurrences is calculated to measure the spread and intensity of discrimination reported; these are reported below.

Figure 6: Caste Discrimination Responses

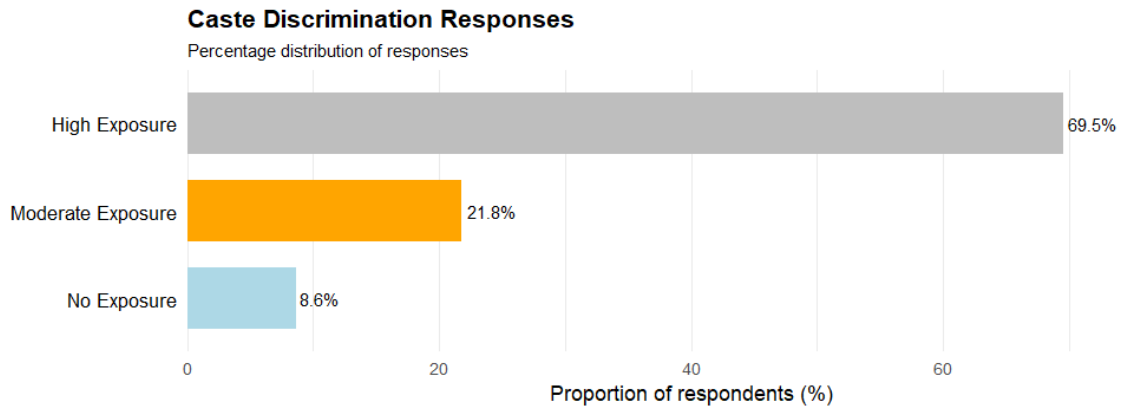


Figure 6: Caste Discrimination Responses

The results indicate that the vast majority of sanitation workers reported high caste discrimination across different domains of life (69.5%, n = 169). Further, moderate exposure was reported by 21.8% (n = 53), and only 8.6% (n = 21) reported no exposure to caste-based discrimination.

Figure 7: DASS-21 score distribution

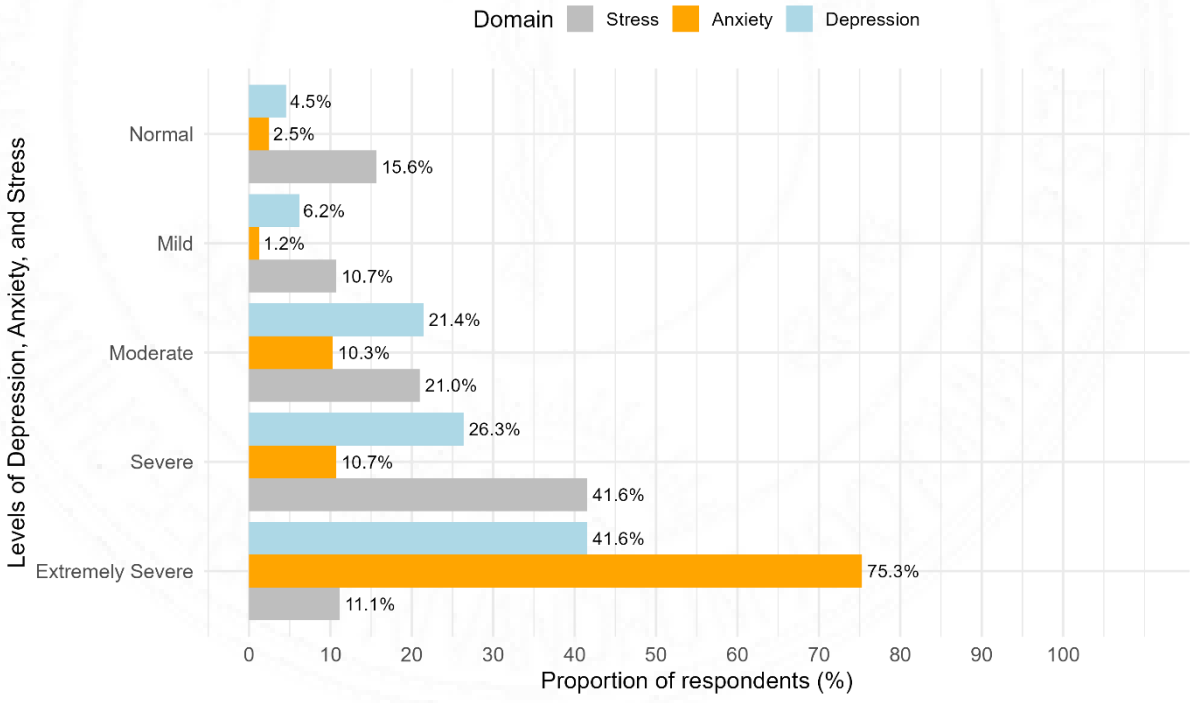


Figure 7: DASS-21 score distribution

The Depression, Anxiety and Stress Scale - 21 Items (DASS-21) is a window for measuring the negative emotional states of depression, anxiety, and distress. Figure 1 shows the frequency distribution of individuals grouped per severity category: Normal, Mild, Moderate, Severe, and Extremely Severe.

Of the total number of participants, 95.5% had any level of depression, 97.5% had any level of anxiety, and 84.4% had any level of stress. Further, of the total population surveyed, 64 (26.3%) sanitation workers were categorized as having severely depressed, and 101 (41.6%) were rated as with extremely severe depression. As for anxiety, 26 (10.7%) were identified to have severe anxiety, while the largest portion (183 participants, 75.3%) had extremely severe anxiety. In total, 101 (41.6%) workers had severe stress levels, while 27 (11.1%) were in the extremely severe stress category. We thus note an extremely high proportion of the participants reporting negative emotional states in the week preceding the survey. During the study, field notes maintained also reveal the extreme levels of hopelessness and anxiety expressed by the workers during their interaction with me. A few examples of narratives from these notes are presented below.

4.7 Narratives from Sanitation Workers

"When you asked us about depression, anxiety, and stress, what could we say? We live with it every day. Our salaries are so low that it feels like our lives are worth nothing. There's a huge gap between what permanent and temporary workers earn, but our hunger, our children's needs, our dreams — they don't understand these differences. Every month feels like a battle just to survive. - ***30y Female Permanent Worker*** *– 5 years of working*

At work, some supervisors treat us like machines, not humans. They dump endless tasks on us without giving us a moment to breathe. If we dare to ask for a break, they scold us and humiliate us. In front of them, we are not allowed to sit or stand freely — we must tie our

hands behind our backs like criminals, showing 'respect.' It burns inside, but we have no choice. ***- 27y Male Temporary Worker*** *– 13 years of working*

Even outside, society does not see us. People throw garbage at us as if we are invisible or worse, untouchable. They don't meet our eyes. They wrinkle their noses when we pass by. We clean their streets, their filth, but in their hearts, we remain dirtier than the waste we carry. ***- 40y Female Permanent Worker*** *– 10 years of working*

Sometimes, when we walk home exhausted, our bodies ache, but the real pain is inside — the feeling that no matter how hard we work, we will never be treated with dignity. That maybe, in their eyes, we were never meant to dream, to live, or to hope." ***- 29y Male Permanent Worker*** *– 3 years of working*

4.8 Note on subsequent analysis

Given the extremely high proportion of any negative emotional state being reported by the participants, it was decided that for the correlations and analytical part, I would explore the determinants of the "Severe" and "Extremely Severe" groups combined, using the mild and moderate groups as the comparator groups. This is an important technique of exploring the social determinants of health described in Sen (Sen and Wasow, 2016) when she describes the importance of intra-group analysis in delineating the impact of various social determinants of health in the mechanisms of inequity among marginalized communities.

4.9 Correlation between Caste-Based Discrimination and Depression (See 3.10 Construction of variables)

I first attempted a correlation analysis between various categories of reported caste-based discrimination (based on the EOD tool) and the dimension of the DASS-21 measuring depression. This analysis revealed a statistically significant positive association ($r = 0.30$, $p < 0.001$). The 95% confidence interval (CI) for the positive association was 0.18 to 0.41.

4.10 Correlation between Caste-Based Discrimination and Anxiety (See 3.10 Construction of variables)

The strength of the relationship between caste-based discrimination and anxiety was slightly higher (correlation coefficient: 0.41; $p < 0.001$; 95% CI: 0.30, 0.51). This shows a moderate to strong positive relationship, implying that more experiences of discrimination could lead to higher anxiety levels being reported.

4.11 Correlation between Caste-Based Discrimination and Stress (See 3.10 Construction of variables)

The correlation between caste-based discrimination and stress was also positive and significant ($r = 0.24$, $p < 0.001$, 95% CI 0.12–0.36). While the correlation here is not as strong as the relationship between depression and anxiety, it is still notable.

4.12 Factors Associated with Depression Severity: Sociodemographic, Occupational, and Caste-based Discrimination among Sanitation Workers

I also explored the association between the negative emotional states and various socio-demographic variables as well as those collected as part of the measurement of occupational related discrimination faced (reported in section cc). These results can be found in Table 5.

- Depression was significantly associated with hereditary employment status ($p = <0.001$), alcohol consumption ($p = 0.032$), tobacco use ($p = 0.002$), occupational discrimination ($p = 0.017$), and Experience of Discrimination (EOD) ($p = 0.004$). All independent variables that were found to be significantly associated with mental health outcomes were included in the logistic regression analysis.

Table 15 Factors Associated with Depression Severity: Sociodemographic, Occupational, and Caste-based Discrimination among Sanitation Workers

Characteristics	Depression Mild & Moderate	Depression Severe & Extremely severe	Chi-Square P-value
Age group, n (%)			
<= 44	40 (34)	79 (66)	0.10
> = 45	27 (24)	86 (76)	
Sex, n (%)			
Female	22 (31)	50 (69)	0.7
Male	45 (28)	115 (72)	
Education, n (%)			
No formal education	30 (25)	91 (75)	0.2
Educated	37 (33)	74 (67)	
Employment type, n (%)			
Permanent	22 (34)	42 (66)	0.3
Temporary	45 (27)	123 (73)	
Hereditary, n (%)			
Not Hereditary	47 (42)	66 (58)	**<0.001**
Hereditary	20 (17)	99 (83)	
Alcohol, n (%)			
No	38 (41.3)	54 (58.7)	**0.032**
Yes	35 (24)	111 (76)	
Tobacco, n (%)			
No	37 (44.4)	55 (55.6)	**0.002**
Yes	30 (21)	110 (79)	
Coping, n (%)			
Others	47 (32)	102 (68)	0.2
Alcohol as coping	20 (24)	63 (76)	
Occupational Discrimination, n (%)			
No exposure	5 (83)	1 (17)	**0.017** (Fisher's Exact Test)
Moderate exposure	24 (26)	68 (74)	
High exposure	38 (28)	96 (72)	
Unfair Treatment, n (%)			
Active response	5 (29)	12 (71)	0.3
Moderate response	68 (31)	131 (69)	
Passive response	4 (15)	22 (85)	
Caste Discrimination EOD (Experience of Discrimination), n (%)			
No exposure	10 (59)	7 (41)	**0.004**
Moderate exposure	18 (38)	30 (63)	
High exposure	39 (23)	128 (77)	

Table 4. 15: Association of depression with the sociodemographic, Occupational, & Caste-based Discrimination among Sanitation Workers

Table 4.16 Results from binary logistic regression Analysis for Severe/Extremely Severe Depression

Variables	Depression Severe & Extremely severe N (%)	Crude OR (95 % CI)	P value	Adjusted OR (95 % CI)	P value
Hereditary					
Not Hereditary	66 (58)		**-Reference-**		
Hereditary	99 (83)	3.53 (1.94-6.59)	**<0.001**	3.59 (1.95-6.80)	**<0.001**
Alcohol					
No	54 (58.7)		**-Reference-**		
Yes	111 (76)	1.88 (1.05-3.36)	**0.033**	**	
Tobacco					
No	55 (55.6)		**-Reference-**		
Yes	110 (79)	2.47 (1.39-4.43)	**0.002**	2.53 (1.38-4.67)	**0.003**
Occupational Discrimination					
No Exposure	1 (17)		**-Reference-**		
Moderate Exposure	68 (74)	14.2 (2.15-279)	**0.018**	**	
High Exposure	96 (72)	12.6 (1.95-246)	**0.023**	**	
Caste Discrimination EOD (Experience of Discrimination)					
No Exposure	7 (41)		**-Reference-**		
Moderate Exposure	30 (63)	2.38 (0.78-7.64)	0.13	**	
High Exposure	128 (77)	4.69 (1.69-13.7)	**0.003**	**	

***** Variable not taken for multivariable logistic regression analysis***

Table 4. 16: Results from binary logistic regression Analysis for Severe/Extremely Severe Depression

4.13 Results of Factors Associated with Severe to Extremely Severe Depression - Bivariate and Multivariate Logistic Regression Analysis

Table 4.16 presents the results of the multivariable regression analysis. Variables for the final model were selected based on the lowest Akaike Information Criterion (AIC) score. The best-fitting model initially included **hereditary, tobacco,** and **occupational**

discrimination. However, **occupational discrimination** was excluded due to having only one observation in the reference category. The remaining variables were retained in the final regression model.

The association between different independent variables and severe/extremely severe depression among sanitation workers was explored via bivariate and multivariate logistic regression analyses.

Participants who reported either or both parents and grandparents as having worked in sanitation had a much higher risk of having severe or extremely severe depression than those who did not report this. In the bivariate analysis, the odds were 3.53 times higher (95% CI: 1.94-6.59, p<0.001), and this association persisted in the multivariate model (adjusted odds ratio [AOR]: 3.59; 95% CI: 1.95-6.80, p<0.001).

Tobacco use was strongly associated with depression. Participants who used tobacco were 2.47 times more likely to have depression (95% CI: 1.39-4.43, p=0.002) in the bivariate analysis, which was significant in the adjusted analysis (AOR: 2.53, 95% CI: 1.38-4.67, p=0.003).

Bivariate analyses found alcohol consumption to be associated with greater odds of depression (OR: 1.88, 95% CI: 1.05-3.36, p=0.033). However, this variable was not included in the multivariable model. It may be noticed that the Sabarimala season, during which many people abstain from alcohol practices, may have temporarily changed alcohol consumption patterns, affecting these findings.

Occupationally related discrimination showed a strong correlation with depression. In bivariate analyses, participants with moderate exposure had 14.2 times higher odds (95% CI: 2.15-279, p=0.018), However, this variable was not included in the multivariable model.

Caste discrimination, as assessed by the EOD, was associated with an increased likelihood of depression. In the bivariate analysis, participants reporting moderate levels of caste discrimination had higher, but not statistically significant, odds of depression (OR: 2.38, 95% CI: 0.78–7.64, p=0.13), and Participants with high levels of caste discrimination had significantly higher odds of depression in the bivariate analysis (OR: 4.69, 95% CI: 1.69–13.7, p=0.003); However, this variable was not included in the multivariable model.

4.14 Factors Associated with Anxiety Severity: Sociodemographic, Occupational, and Caste-based Discrimination among Sanitation Workers

Table 6 shows the association of anxiety with the sociodemographic, lifestyle characteristics and Occupational & Caste-based Discrimination of study participants.

- Hereditary occupation status (p = <0.001), alcohol usage (p=0.010), tobacco usage (p = 0.015), occupational discrimination (p=<0.001), and Experience of Discrimination (EOD) (p = <0.001) were found to be significantly related with anxiety All independent variables found to have significant association with mental health outcomes were included in the logistic regression analysis.

Tables 4.17 Factors Associated with Anxiety Severity: Sociodemographic, Occupational, and Caste-based Discrimination among Sanitation Workers

Characteristics	Anxiety Others	Anxiety Severe & Extremely severs	Chi-Square P-value
Age group, n (%)			
<= 44	15 (13)	105 (88)	0.7
> = 45	13 (11)	104 (89)	
Sex, n (%)			
Female	8 (11)	65 (89)	0.8
Male	20 (12)	144 (88)	
Education, n (%)			
No formal education	13 (10)	111 (90)	0.5
Educated	15 (13)	98 (87)	
Employment type, n (%)			
Permanent	10 (15)	57 (85)	0.4
Temporary	18 (11)	152 (89)	
Hereditary, n (%)			
Not Hereditary	25 (22)	91 (78)	**<0.001** (Fisher's Exact Test)
Hereditary	3 (2.5)	118 (98)	
Alcohol, n (%)			
No	17 (19.6)	74 (80.4)	**0.010**
Yes	11 (7.5)	135 (92)	
Tobacco, n (%)			
No	17 (22.2)	77 (77.8)	**0.015**
Yes	11 (7.7)	132 (92)	
Coping, n (%)			
Others	20 (13)	133 (87)	0.4
Alcohol as coping	8 (9.5)	76 (90)	
Occupational Discrimination, n (%)			
No exposure	6 (75)	2 (25)	**<0.001** (Fisher's Exact Test)
Moderate exposure	8 (8.3)	88 (92)	
High exposure	14 (11)	119 (89)	
Unfair Treatment, n (%)			
Active response	4 (24)	13 (76)	0.2 (Fisher's Exact Test)
Moderate response	20 (10)	171 (90)	
Passive response	4 (14)	25 (86)	
Caste Discrimination EOD (Experience of Discrimination), n (%)			
No exposure	6 (30)	14 (70)	**<0.001**
Moderate exposure	12 (24)	38 (76)	
High exposure	10 (6)	157 (94)	

Table 4. 17: Association of anxiety with the sociodemographic, Occupational, & Caste-based Discrimination among Sanitation Workers

Table 4.18 Results from binary logistic regression Analysis for Severe/Extremely Severe Anxiety

Variables	Anxiety Severe & Extremely severe N (%)	Crude OR (95 % CI)	P value	Adjusted OR (95 % CI)	P value
Hereditary					
Not Hereditary	91 (78)		**-Reference-**		
Hereditary	118 (98)	10.8 (3.65-46.4)	**<0.001**	10.9 (3.64-47.1)	**<0.001**
Alcohol					
No	74 (80.4)		**-Reference-**		
Yes	135 (92)	2.82 (1.27-6.51)	**0.012**	2.86 (1.24-6.86)	**0.015**
Tobacco					
No	77 (77.8)		**-Reference-**		
Yes	132 (92)	2.65 (1.19-6.11)	**0.018**	**	
Occupational Discrimination					
No Exposure	2 (25)		**-Reference-**		
Moderate Exposure	88 (92)	33.0 (6.47-253)	**<0.001**	**	
High Exposure	119 (89)	25.5 (5.32-186)	**<0.001**	**	
Caste Discrimination EOD (Experience of Discrimination)					
No Exposure	14 (70)		**-Reference-**		
Moderate Exposure	38 (76)	1.36 (0.41-4.24)	0.6	**	
High Exposure	157 (94)	6.73 (2.04-21.1)	**0.001**	**	

***** Variable not taken for multivariable logistic regression analysis***

Table 4. 18: Results from binary logistic regression Analysis for Severe/Extremely Severe Anxiety

4.15 Results of Factors Associated with Severe to Extremely Severe Anxiety – Bivariate and Multivariate Logistic Regression Analysis

Table 4.18 presents the results of the multivariable regression analysis. Variables for the final model were selected based on the lowest Akaike Information Criterion (AIC) score.

The best-fitting model initially included **Hereditary, alcohol, Caste discrimination,** and **Occupational discrimination**. However, **Caste discrimination** and **Occupational discrimination** were excluded due to having less observation in the reference category. The remaining variables were retained in the final regression model.

Participants with hereditary occupational backgrounds had a vastly higher likelihood of having severe to extremely severe anxiety than those who did not have a hereditary background. Crude OR showed that respondents with a hereditary history were 10.8 times more likely to experience high anxiety (95% CI: 3.65–46.4, p = <0.001). After adjusting for other variables, the adjusted odds ratio (AOR) remained significant at 10.9 (95% CI: 3.64–47.1, p <0.001).

Bivariate analyses found alcohol consumption to be associated with greater odds of anxiety (OR: 2.82, 95% CI: 1.27-6.51, p=0.012). This association became insignificant in the multivariate model (AOR: 2.86, 95% CI: 1.24-6.86, p=0.015). It may be noticed that the Sabarimala season, during which many people abstain from alcohol practices, may have temporarily changed alcohol consumption patterns, affecting these findings.

Tobacco use was also linked to severe anxiety. Those who used tobacco were 2.65 times more likely to develop severe anxiety than those without tobacco habits (95% CI: 1.19–6.11, p = 0.018). However, this variable was not included in the multivariable model.

Occupational discrimination exposure was strongly associated with severe anxiety. Participants who were moderately exposed had approximately 33 times the odds (95% CI: 6.47–253, p = <0.001) and, Crude OR for high exposure to occupational discrimination was significantly unadjusted transformed (25.5, 95% CI: 5.32–186, p = <0.001); However, this variable was not included in the multivariable model.

Caste discrimination, as assessed by the EOD, was associated with an increased likelihood of anxiety. In the bivariate analysis, participants reporting moderate levels of caste discrimination had higher, but not statistically significant, odds of anxiety (OR: 1.36, 95% CI: 0.41–4.24, p=0.6), and Participants with high levels of caste discrimination had significantly higher odds of anxiety in the bivariate analysis (OR: 6.73, 95% CI: 2.04–21.1, p=0.001); However, this variable was not included in the multivariable model.

4.16 Factors Associated with Stress: Sociodemographic, Occupational, and Caste-based Discrimination among Sanitation Workers

Tables 7 show the association of Stress with the sociodemographic, lifestyle characteristics, and Occupational & Caste-based Discrimination of the study participants

- Significantly associated with alcohol use ($p < 0.001$), tobacco use ($p < 0.001$), alcohol as a means of coping ($p < 0.014$), and EOD ($p = 0.016$). All independent variables that were significantly associated with the mental health outcomes were included in the logistic regression analysis.

Tables 4.19 Factors Associated with Stress: Sociodemographic, Occupational, and Caste-based Discrimination among Sanitation Workers

Characteristics	Stress Others	Stress Severe & Extremely severe	Chi-Square P-value
Age group, n (%)			
<= 44	43 (41)	61 (59)	0.3
> = 45	34 (34)	67 (66)	
Sex, n (%)			
Female	23 (35)	43 (65)	0.6
Male	54 (39)	85 (61)	
Education, n (%)			
No formal education	38 (35)	70 (65)	0.5
Educated	39 (40)	58 (60)	
Employment type, n (%)			
Permanent	17 (30)	40 (70)	0.2
Temporary	60 (41)	88 (59)	
Hereditary, n (%)			

Not Hereditary	38 (42)	53 (58)	0.3
Hereditary	39 (34)	75 (66)	
Alcohol, n (%)			
No	75 (81.5)	17 (18.5)	**<0.001**
Yes	23 (17)	111 (83)	
Tobacco, n (%)			
No	84 (84.8)	15 (15.2)	**<0.001**
Yes	21 (16)	113 (84)	
Coping, n (%)			
Others	56 (44)	71 (56)	**0.014**
Alcohol as coping	21 (27)	57 (73)	
Occupational Discrimination, n (%)			
No exposure	3 (100)	0 (0)	0.091 (Fisher's Exact Test)
Moderate exposure	30 (35)	55 (65)	
High exposure	44 (38)	73 (62)	
Unfair Treatment, n (%)			
Active response	6 (38)	10 (62)	0.9
Moderate response	63 (38)	103 (62)	
Passive response	8 (35)	15 (65)	
Caste Discrimination EOD (Experience of Discrimination), n (%)			
No exposure	7 (54)	6 (46)	**0.016**
Moderate exposure	22 (54)	19 (46)	
High exposure	48 (32)	103 (68)	

Table 4. 19: Association of stress with the sociodemographic, Occupational, & Caste-based Discrimination among Sanitation Workers

Table 4.20 Results from binary logistic regression Analysis for Severe/Extremely Severe Stress

Variables	Stress Severe & Extremely severe N (%)	Crude OR (95 % CI)	P value	Adjusted OR (95 % CI)	P value
Alcohol					
No	17 (18.5)		**-Reference-**		
Yes	111 (83)	15.3 (7.73-31.9)	**<0.001**	20.5 (8.18-58.3)	**<0.001**
Tobacco					
No	15 (15.2)		**-Reference-**		
Yes	113 (78.2)	20.1 (9.88-43.3)	**<0.001**	24.5 (10.1-67.9)	**<0.001**
Coping					
Others	71 (56)		**-Reference-**		
Alcohol as coping	57 (73)	2.14 (1.17-4.00)	**0.015**	**	
Caste Discrimination EOD (Experience of Discrimination)					

No Exposure	6 (46)		**-Reference-**	
Moderate Exposure	19 (46)	1.01 (0.29-3.63)	0.9	**
High Exposure	103 (68)	2.50 (0.79-8.16)	0.12	**

***** Variable not taken for multivariable logistic regression analysis***

Table 4. 20: Results from binary logistic regression Analysis for Severe/Extremely Severe Stress

4.17 Results of Factors Associated with Severe to Extremely Severe Stress – Bivariate and Multivariate Logistic Regression Analysis

Table 4.20 presents the results of the multivariable regression analysis. Variables for the final model were selected based on the lowest Akaike Information Criterion (AIC) score. The best-fitting model included **Alcohol** and **Tobacco**.

There was a clear association between alcohol use and severe stress. Compared to non-users, alcohol consumers had 15.3 times the odds of severe stress (95% CI: 7.73–31.9, p = <0.001). After adjusting covariables, the common association stayed significant (AOR = 18.3 [95% CI: 7.54–50.3, p = <0.001]). Seasonal abstinence (Sabarimala) may have masked the alcohol link with depression/anxiety, but did **not** affect the strong link between alcohol use and stress.

Severe stress was also strongly associated with tobacco use. Compared to those who do not use tobacco, tobacco users have 20.1 times greater odds of having severe stress (95% CI: 9.88–43.3, p = <0.001). Significantly increased adjusted odds to 23.7 (95% CI: 9.78–65.5, p = <0.001).

Using alcohol as a coping mechanism was positively correlated with severe stress in bivariate analysis (OR: 2.14, 95% CI: 1.17–4.00, p = 0.015). However, this variable was not included in the multivariable model.

Caste discrimination was excluded from the multivariate analysis.

CHAPTER – 5

DISCUSSION PHASE ONE

Discussion Part 1 for Translated and Validation of Experience of Discrimination Scale into Tamil Language

5.1 Rationale for Choosing the Experience of Discrimination (EOD) Scale to Measure Caste-Based Discrimination

Gap in Existing Literature

Nancy Krieger has consistently underscored the importance of powerful tools for measuring racial discrimination throughout her body of work, for example (Krieger 1999). Further, most studies of caste discrimination in India to date have relied on qualitative methods (interviews, narratives, case studies), which yield rich insights but not **quantified measures** which may be useful for systematic comparisons. Thus, a standardised validated quantitative tool is needed to enhance empirical research on caste-based discrimination, fully acknowledging the limitation of a purely quantitative approach for a social phenomenon like caste which is inherently context specific.

Need for a Quantitative Measure

Researchers can use a quantitative scale to:

- Compare the reported discrimination between groups and contexts.
- Study associations between reported discrimination and various outcomes of interest, including, for example, mental health, education, and employment.
- Study changes over time in order to study the impact of interventions, policies or secular trends.

Why the Experience of Discrimination (EOD) Scale?

On searching the literature, the EOD scale was one of the few that seemed to measure reported discrimination that was simple to use and that had been studied well. A review of the relevant literature showed that the EOD had:

- Excellent psychometric properties (reliability, validity), flexibility (can be applied to different kinds of discrimination) (Krieger et al., 2005) which is also one of the reasons why we chose to use it to explore the discrimination arising in the context of caste.
- Non-intrusive capture of multiple domains (workplace, education, healthcare, public spaces).

Since caste discrimination has many features, such as systemic oppression, social exclusion, and institutional bias, among others, which is structurally similar to racial discrimination (), I am proceeding with the adaptation of the EOD scale to explore reported discrimination due to caste.

5.2 Significant Contributions

This study contributes to the measurement of discrimination among marginalized populations along two key dimensions. Firstly, it provides the first systematic adaptation and validation of the Experience of Discrimination (EOD) scale (Krieger et al., 2005) for evaluating caste-based discrimination in Tamil. Bridging an important gap between research on discrimination. This tool promises to help in the identification, and measurement of discrimination and thus potentially contributing to addressing the issue in south Asian contexts. Second, the results provide additional evidence of the strong psychometric properties of the Tamil version of the EOD (e.g., excellent internal consistency) as compared to the English and Spanish versions (Bastos et al., 2010; Krieger

et al., 2005), thus further supporting its cross-cultural relevance. This allows for what I believe is a robust measurement of discrimination experienced by Tamil speaking populations, with a specific focus on sanitation workers who have faced historical and systemic marginalization.

5.3 Methodological Rigor

The study used several standard methodological approaches such as content validity assessment, cognitive interviews, and Intraclass Correlation Coefficient (ICC) analysis for inter-rater reliability to study the psychometric performance of the tool. The results add to the body of literature on the measurement of discrimination and highlight that the Tamil-translated EOD scale is probably linguistically and culturally appropriate for administration to sanitation workers in Tamil Nadu.

5.4 Content Validity and Cognitive Interview Findings

Assessing the content validity of the EOD-scale Tamil version confirmed that the translated items retained their conceptual equivalence to the original scale. This assessment was performed by individual experts from varying backgrounds, including those who had worked as part of the movements and were from marginalized groups. They assessed the tool for relevance, sense, and cultural relevance. In addition, during translation, both those who did the forward and backward translation were informed about the planned use of this to measure caste-based discrimination and hence did the translation and back translation with this in mind, adding another layer of assessment of content validity to the whole process.

In addition to the above steps, I conducted Cognitive interviews. They confirmed this evaluation by showing that respondents understood the items as intended. Based on participant feedback, the template was slightly modified to improve clarity and ease of

understanding. Such a procedure reflects best practices in adapting scales for use at different levels of analysis and bolsters the robustness of the translated EOD scale.

Cognitive interviews revealed specific challenges with language for participants with low literacy. Edits were made to enhance readability without changing the intended meaning of the scale. The scale's usability and acceptability by the target population were strengthened throughout this iterative refinement process.

5.5 ICC Results

I also performed standard tests that checked the reliability of the tools. This includes Interclass correlation (ICC). ICC determines the degree of agreement of the responses among raters. The calculated ICC values reveal excellent agreement, demonstrating that the translation I had developed yielded stable and reliable results.

In addition, the ICC analysis verified that item responses were consistent through several assessments, lending further strength to the scale as a measure of discrimination experiences.

DISCUSSION PHASE TWO

The objective of the study was to measure and assess the severity of self-reported discrimination due to caste and its relationship to mental health in terms of the negative emotional states of depression, anxiety, and stress among sanitation workers in the Dindigul Municipal Corporation, Tamil Nadu. The study used a cross-sectional design and recruited a total of 243 sanitation workers who were on the rolls of the Dindigul Municipal Corporation. The sample included both permanent and temporary workers. In this chapter, I will discuss the findings in comparison with the extant literature. Further, the implications will be highlighted, and the strengths and limitations will be outlined.

5.6 Sociodemographic Characteristics

The gender overview shows a notable difference, as one can see in **Table 4.2**; the workforce is predominantly male (68.7%), reflecting the gendered nature of sanitation work, which probably reflects both physical demands and the socio-cultural expectations around labour roles. Educational attainment was extremely poor, with over half (52.3%) of the participants being either uneducated or having only primary-level education. This is particularly concerning in a state like Tamil Nadu, which has historically been a front-runner in educational attainment, with a current literacy rate of 85.5% in Dindigul (which is higher than the mean state literacy rate). The lack of education among workers not only restricts occupational mobility but also reinforces intergenerational dependence on sanitation work.

The average household size was four members, but combined with economic precarity, it may contribute to additional financial strain. A majority lived in rented housing (56.0%), with only 6.2% accessing government housing schemes, suggesting limited state support in improving living standards. Crucially, all participants held Below Poverty Line (BPL) ration cards, indicating a uniformly high level of poverty.

The participants were overwhelmingly Hindu (98.8%) and belonged to the Scheduled Castes (98.4%), predominantly from the Sakiliyar sub-caste (95.1%). This reveals the continuing grip of caste-based occupational segregation, with sanitation work being deeply rooted in hereditary roles and social stigma. As highlighted in prior studies (Kaur, 2022; Krishnamurthi and Krishnaswami, 2020), such caste entrapment has profound implications for social mobility and dignity.

Compared to national data, where 69% of sanitation workers belong to SC communities, 15% to OBCs, and 8% each to ST and general categories (Lakshman, 2024), the concentration of SCs in Dindigul is markedly higher. This suggests a more deeply rooted caste entrapment in Tamil Nadu's sanitation sector, underscoring the need for stronger, context-specific policy interventions to break this cycle of hereditary, caste-based labor.

5.7 Substance Use Among Sanitation Workers

The study demonstrated high rates of substance use, including 62.1% drinking alcohol and 59.3% using tobacco. Alarmingly, 25.9% specifically admitted utilizing alcohol as a coping strategy, which is consistent with the literature that has documented that higher-stress professions drive maladaptive methods of coping (Gada et al., 2023). On the other hand, only 9.5% reported seeking social support, and even fewer individuals turned to family (9.1%) or crying (8.6%) as outlets, suggesting either a cultural stigma against emotional vulnerability or an expectation of resilience among manual laborers (Dhyani et al., 2022). A large number of respondents used spiritual coping (23.9% praying) and faith as an important psychological buffer, while isolation was reported by 12.3% avoidance, time alone), which may indicate helplessness and affect the mental health. Overall, we see a picture of a high proportion using Alcohol and Tobacco, most people using various internalizing strategies to cope with stress.

High levels of negative emotions were also associated with either the consumption of alcohol and/or smoking, indicating an association between these and harmful health-related behaviors. I was unable to further explore these relationships due to the sample size and the possibility of information bias due to conducting the survey during the Sabarimala season, where many individuals take a vow of abstinence from alcohol and smoking.

5.8 Inter-Generational Occupational Continuity

In an attempt to document the inter-generational nature of this occupation due to its strong association with caste in India, I recorded the occupations of the participants' parents and grandparents. As shown in the results chapter, a significantly large proportion of individuals reported that both their parents and grandparents had worked in sanitation (49.8%), while nearly 64.2% reported that their parents and grandparents (67.5%) had worked in the same field.

This pattern suggests that caste functions as a mechanism that constrains Dalits from taking on alternative occupations and concentrates them and other sub castes into ritually "polluting" labor. Potentially, this also represents a constraint on the possibility of occupational mobility. The reproduction of these occupational hierarchies over generations exemplifies how caste acts as a key Category that determines labour market outcomes, partly through internalizing stigma within family and occupational identities (Monteiro, 2022). Further, this was one of the key variables that emerged as a consistently significant factor associated with negative emotional states in the DASS-21 scale. In fact, in some cases, this showed significance even compared to reported discrimination measured using the EOD scale.

The findings highlight caste as a structural barrier to occupational mobility, with Dalits concentrated in sanitation work due to inherited roles and internalized stigma. This calls for targeted labor reforms and anti-stigma initiatives beyond existing reservation policies.

5.9 Aspirations for Occupational Change

In the study, I tried to assess whether the workers were satisfied with their jobs, given the association with pollution and the dignity of work. A significant proportion (66.7%) of them expressed that they would be willing to change jobs if possible. Of the reasons chosen by them, the major reasons were - for their freedom (48.1%), desire for recognition (32.7%), or to break the tradition (19.1%). Significantly In contrast, those who reported that would not take another job even if available (33.3%) cited habitual attachment (34.6%), fatalistic views of their profession (34.6%), and lack of opportunities (29.6%), while 1.2% cited fear of discrimination that they would face in other jobs due to their caste. This shows how individuals in sanitation work are keen to get out of it due to the stigmatized nature of the job and probably its association with caste; however, a significant number, almost 1 in 3, seem to have internalized their social position to the extent of not wanting a change of jobs. This hints at how deeply caste has been internalized.

5.10 Occupational Roles and Workplace Dynamics

A majority of the participants (35.8%) are contributing to rotational duties (such as sweeping, garbage collection, and drainage cleaning), garbage collectors (31.7%), sweepers (25.9%), and drainage cleaners (6.6%), as shown in **Table 4.9**. Rotational systems can bring a more even workload across employees. This study also found that occupational roles were associated with negative emotional states, particularly among those engaged in physically demanding or high-risk tasks. The mental health burden—reflected in elevated

depression, anxiety, and stress scores—appears to align with the nature of the work and its associated stressors.

Existing literature highlights the hazards and impact of job satisfaction and/or safety. The prominence of garbage collectors indicates the potentially hazardous nature of the waste management process, with exposure to biological as well as chemical hazards as reported in the literature (Gada et al., 2023; K, 2019; Kadam et al., 2023; Monteiro and Nalini, 2021). The long hours of physical exertion performed by sweepers may have implications for musculoskeletal strain and thus the need for ergonomic interventions. This indicates acute risks (e.g., toxic gases, pathogens) faced by drainage cleaners despite their smaller representation, highlighting the need for stringent PPE protocols for drainage cleaners and equitable allotment of tasks among workers to minimize occupational harms.

As shown in **Figure 6**, a significant proportion of participants (69.5%) reported experiencing caste discrimination, with 21.8% reporting moderate levels. Only 8.6% of participants reported no discrimination, a figure that may reflect occasional advancement but also highlights the outlier status of this group, further emphasizing the need for systemic structural reforms to address caste-based inequalities.

While this study primarily examined the relationship between caste discrimination and negative emotional states, existing research provides a broader context for understanding the public health implications of these findings. Notably, studies by Devakumar and Selvarajah in the Lancet Commission on Race and Xenophobia establish a clear link between caste-based discrimination and negative health outcomes. These outcomes arise through mechanisms such as chronic inflammation, psychological distress, and other long-term physiological effects. As such, the significance of this study extends beyond its focus on mental health, highlighting the broader health risks posed by caste discrimination. This

underscores the urgent need for comprehensive policy interventions aimed at addressing both the psychological and physiological impacts of caste-based marginalization.

DASS-21 scores indicate a huge burden of negative emotional states amongst sanitation workers, with reported rates of severe/extremely severe depression (67.9%, including 41.6% extremely severe) and anxiety (86%, including 75.3% extremely severe) being disproportionately high; stress was similarly high, with 52.7% scoring severe-to-extremely severe. These findings indicate that psychological distress among sanitation workers is much higher than that of the general population (Monteiro and Nalini, 2021; Oza et al., 2022). The extreme level of anxiety — highest for the three measures — might reflect the acute dangers of their work, including exposure to hazardous waste, physical injury and inadequate protective gear, along with job insecurity and financial strain The finding that nearly half the workers fell into the extremely severe depression category underscores the debilitating effects of systemic neglect. In a similar vein, extreme levels of stress most probably arise from precarious work schedules, exploitative labour conditions, and lack of institutional protections (Giri et al., 2011).

As presented in the results section, during the interviews, I sensed an overpowering hopelessness, anxiety, and frustration due to the day-to-day discrimination they faced from society and supervisors at work, as well as the grinding poverty in the face of escalating needs and aspirations of their children. The inter-generational nature of the work as well as the feeling of wanting to leave their job, or alternatively feeling trapped in the job, all lead me to conclude that these high rates of negative emotions are something of concern and that need to be systematically followed by competent professionals who can assess them. It is likely that these negative emotional states represent mental health issues as well.

5.11 Correlation between Caste-Based Discrimination and Depression, Anxiety & Stress

The analysis demonstrates strong and positive associations between situational experiences of caste-based discrimination and adverse mental health outcomes, particularly depression, anxiety, and stress. The most robust relationship was found with anxiety ($r = 0.42$), suggesting that individuals who have experienced caste-based discrimination may be more likely to expose themselves to threats hypervigilantly and to experience the fear of social exclusion and a rumination of concern—hallmark symptoms of anxiety disorders (Soto et al., 2011).

The moderate association with depression ($r = 0.31$) is consistent with other research on discrimination and mood disorders, which suggests that chronic exposure to prejudice can lead to feelings of hopelessness, low self-worth, and emotional distress (Krieger, 2014). The relatively weaker correlation between discrimination and stress ($r = 0.25$), while still meaningful, may be attributed to several contextual factors. One possibility is that some sanitation workers may have normalized discriminatory experiences over time. Especially when such treatment is persistent across generations, individuals might no longer perceive these experiences as acutely stressful, even though they continue to impact deeper emotional outcomes such as depression. Additionally, the inclusion of permanent workers—who typically have job security, stable income, and access to benefits—might buffer or dilute the stress response associated with discrimination, thereby lowering the overall observed association in the sample.

These findings are consistent with the minority stress model positing that systemic discrimination establishes a hostile social environment, which increases the risk for mental health outcomes. The greater effect on anxiety than on depression and stress may signify the immediacy of the psychological cost of anticipating and encountering caste-based

prejudice in daily life. Moreover, the entrenched presence of caste systems within the sociocultural, economic, and institutional milieu would likely further worsen long-term disparities in mental health.

5.12 Structural Inequities: Associations Between Discrimination, Hereditary Labor, and Mental health Among Sanitation Workers

The study shows that people employed in sanitation work in India are highly distressed psychologically due to systematic discrimination and hereditary labour. That is, family involvement in sanitation work had significant associations with severe depression ($p < 0.001$) and anxiety ($p < 0.001$), thereby corroborating Krishnamurthi and Krishnaswami's (2020) analysis of caste-based occupational immobility and Kaur's (2022) observations on intergenerational trauma. These results demonstrate how caste-entrenched labour systems sustain mental health inequities, even in the face of constitutional protections (Constitution of India | Legislative Department | India, 2024).

Occupational & caste-based discrimination emerged as an important predictor, with dose-response relations for depression ($p = 0.017$), anxiety ($p < 0.001$), and stress ($p = 0.016$). The 72% rate of severe depression among highly discriminated workers is significantly higher than global estimates for marginalized groups WHO, supporting Krieger's (1990, 2005) theorization connecting systemic discrimination and poor health outcomes and health inequities. The lack of high stress among workers experiencing no discrimination (0%) supports Robinson and Kerr's (2024) finding that equitable workplaces protect against suffering exacerbated by discrimination.

5.12.1 Understanding the Lack of Significance in the Response to Unfair Treatment Dimension

The lack of significance found for the unfair treatment dimension of the EOD scale in both bivariate and multivariate analyses is an important and unexpected result. While Krieger's framework suggests that unfair treatment is a significant stressor influencing mental health, the absence of this finding in the current study raises several potential explanations that merit further exploration.

- Contextual and Cultural Differences: One possible explanation for this result is the sociocultural context of the study. In India, caste-based discrimination is often subtle, ingrained, and institutionalized, which may cause workers to either underreport or fail to recognize instances of unfair treatment as discrimination.

5.13 Determinants of Depression, Anxiety, and Stress Among Sanitation Workers: A Multivariable Analysis.

The study highlights the complex interplay of hereditary, behavioral, and socio-structural factors that contribute to mental health outcomes in sanitation workers. Hereditary predisposition had a robust and very homogeneous association with severe depression, anxiety, and stress, in agreement with previous findings suggesting heritable risk to mental health disorders (Dhyani et al., 2022; WHO, 2022). The results underscore the importance of early screening and preventive mental health strategies for those with a family history of such conditions.

Substance use was strongly associated with poor mental health; notably, tobacco use had a strong correlation with stress (AOR = 23.7, $p < 0.001$), whereas alcohol use also had a strong association with stress (AOR = 18.3, $p < 0.001$). These findings are consistent with previous studies indicating a bidirectional link between substance use and psychological

distress (Garg and Kumar, 2019; Oza et al., 2022), reinforcing the need for interdisciplinary interventions targeting both addiction and mental health.

Although occupational discrimination showed a significant association in the unadjusted model for depression (OR = 12.6, p = 0.023). **Caste based discrimination** is significant in crude (OR = 4.69, p = 0.003) in depression. Previous research has shown that discrimination can have profound and lasting effects on mental health outcomes among marginalized communities (Devakumar et al., 2022; Subramaniam, 2018). These findings highlight the enduring impact of systemic marginalization on mental health. This unbroken relationship underscores the urgent need for policy interventions to actively address caste-based discrimination and reform workplaces to improve the mental well-being of sanitation workers.

This finding is notable because it suggests that occupational discrimination may have a more immediate or perceived psychological impact than caste-based discrimination in this context. It also raises important questions about the overlap and distinction between caste-based and occupational discrimination, particularly in the case of sanitation workers, where caste and occupation are often closely linked

Although alcohol use as a coping mechanism was associated with stress during the initial model (OR = 2.14, p = 0.015), this indicating that perhaps other strategies or social supports may mediate between stress and alcohol use (Thoits, 2010). Future interventions should consider adaptive coping, such as the use of community-based support programs, to buffer stress in this vulnerable population.

CHAPTER 6

Strengths and Limitations of the Study

6.1 Strength of the study

First Validation of the EOD Scale in Tamil

The Experience of Discrimination (EOD) Scale in the Tamil language is validated for the first time through this study, filling a significant gap in existing research on discrimination in South Asian contexts. This supports inclusion and culturally relevant tools for lesser-represented and marginalized Tamil-speaking populations

The Tamil EOD is also found to possess high internal consistency and ICC, following the English and Spanish versions (Bastos et al., 2010; Krieger et al., 2005). This strengthens its utility and validity as a measure of discrimination across diverse contexts.

As for potential advantages of this study, one such strength is the analysis of the association between self-reported discrimination and mental health outcomes among sanitation workers. The use of validated scales like the Experience of Discrimination Scale is important as it provides a standardized measure of a key variable, which improves the validity of the study and its ability to be compared with existing literature.

The study also describes striking sociocultural and structural drivers, such as inherited occupational restrictions and caste-based discrimination. The research offers valuable insights into the intersectionality between caste, employment status, and mental health by exploring these issues in-depth and making contributions to the larger perspective of labour rights and public health disparities.

6.2 Limitations of the Study

Limited Validation The study only reported doing content validity, expert reviews, (ICC), internal consistency, and test-retest Reliability, and did not assess further psychometric properties, including:

Construct validity (e.g., factor analysis to confirm the dimensional structure of the scale)

Sample specificity (sanitation workers) necessitates further validation in other occupations.

One of its main limitations is its cross-sectional design, which prevents establishing causal relationships between discrimination and negative mental health outcomes. Although the associations are significant, the study cannot conclude whether discrimination in itself increases depression, anxiety, and stress or whether those with existing mental health problems are more likely to perceive discrimination. A longitudinal approach would go further in this respect, revealing how these relationships evolve.

A second concern originates from the use of **self-reported data**, leading to the possibility of recall and social desirability biases. Given the sensitive nature of topics such as discrimination, participants may underrepresent or overspecify their experiences, possibly skewing the accuracy of findings.

The absence of longitudinal data also hinders the study's capacity to monitor mental health trends over time. This approach could have given a better picture of how experience(s) of discrimination develop over time and what repercussions affect longer-term well-being, something not captured by this cross-sectional study design.

CHAPTER 7

Conclusion and Recommendation

In summary, the study's findings highlight broader themes discussed in *Measuring Racial Discrimination (2004)* regarding the role of cumulative discrimination and the need for longitudinal, intergenerational assessment of discrimination across domains. This study fills an important gap in assessment tools pertaining to a highly marginalized group (sanitation workers) by providing validation for the Tamil version of the Experience of Discrimination (EOD) Scale. With the establishment of content validity, cognitive interviews, and inter-rater reliability, this scale demonstrates a careful methodological approach to ensuring that it is suitable in the cultural context, psychometrically sound, and capable of accurately evaluating the severity of discrimination experiences.

The problem is, as discussed in Chapter 11 of *Measuring Racial Discrimination (2004)*, a measure of discrimination at a point in time or within a domain may not capture the cumulative and systemic effects of discrimination. Future research should expand on this work by considering longitudinal data to examine the impact of repeated exposure to discrimination on mental health, socioeconomic outcomes, and intergenerational disparities. More rigorous validation of the Tamil EOD scale across both diverse populations and occupations, and assessment of construct validity, would further enhance its utility in wider settings.

My study establishes a significant burden of depression, anxiety, and stress among sanitation workers in Dindigul, indicating poor mental health among sanitation workers as a risk factor. The results indicate that caste discrimination and heritable occupational restrictions are among the primary factors determining their mental health trajectory. This

strengthens the evidence that discrimination is strongly structural in nature, with caste being a particularly potent predictor of psychological distress.

The findings fit well with structural discrimination theories suggesting that laborers would be more empowered to act if systemic changes were made to sectors where deep-rooted caste hierarchies prevail, leading to better socio-economic conditions for individuals earning a livelihood through labour. Behavioural coping among sanitation workers is primarily alcohol use and religion, with treatment-seeking remaining alarmingly low for mental health. Psychological burdens on immigrants were therefore attributed to cultural barriers as well as restricted access to mental health services.

These same structural constraints, economic insecurity, and intergenerational occupational continuity that attach many sanitation workers to this line of work contribute to their profound dissatisfaction with their occupation. These insights highlight the urgent need to implement policy measures that address discrimination in the workplace, mental health services, alternative employment opportunities, and other means to break the cycle of hereditary labor.

Recommendations of the Study

The findings of this study, we propose the following recommendations to further discrimination measurement research and its impact:

Psychometric Validation Expansion

- Further investigate the psychometric properties of Tamil EOD scale through further validation, incorporating construct validity (factor analysis, etc.) and criterion validity across various settings.

- Test the Tamil EOD scale in other occupational groups and marginalised communities (e.g., manual labourers, informal sector workers) to assess its generalisability beyond the sanitation workers, and further explore its ability to measure discrimination.

Occupational Mobility and Educational Empowerment

- In order to break intergenerational occupational entrapment, strategies that ensure better educational achievement and more diverse job opportunities are needed. This can be achieved by strategies such as
    - By providing full educational scholarships and school retention support for sanitation workers ' children.
    - Organise alternative job placement drives and job fairs to facilitate sanitation workers in exploring job opportunities beyond sanitation work.

Structural and Policy Reforms

- During the survey, many participants shared that their supervisors are from different castes, often dominant ones. They expressed that this caste difference contributes to discriminatory behavior.
    - More diversity and representation in supervisory posts should be ensured. Strategies like career progression paths for sanitation workers and reservations should be explored.
- Stronger implementation of anti-discriminatory laws at the workplace level to penalize in case of caste-based discrimination during hiring, promotions, and workplace interactions.

Workplace Interventions for Psychological Well-being

- Improve occupational safety by making PPE (Personal Protective Equipment) available via automated vending machines and conducting regular compliance checks.
- Establish anonymous grievance redressal mechanisms accessible to sanitation workers to report discrimination in the workplace without risk of retribution.

Further Research and Monitoring

- Carry out longitudinal studies on the long-term effects of discrimination on mental health and workplace mobility.
- Using qualitative research methods, such as in-depth interviews and focus groups, to understand various barriers to mental health support among sanitation workers.

BIBLOGRAPHY

Alagarsamy S, Sugirthan N, Mehrolia S, et al. (2022) Translation and validation of the Tamil version of depression anxiety stress scales-21. *Journal of Affective Disorders Reports* 10: 100398.

Banerjee B and Knight JB (1985) Caste discrimination in the Indian urban labour market. *Journal of Development Economics* 17(3): 277–307.

Bastos JL, Celeste RK, Faerstein E, et al. (2010) Racial discrimination and health: A systematic review of scales with a focus on their psychometric properties. *Social Science & Medicine* 70(7): 1091–1099.

Caste System in Ancient India - World History (2024). Available at: https://www.worldhistory.org/article/1152/caste-system-in-ancient-india/ (accessed 10 August 2024).

Cicchetti DV and Sparrow SA (1981) Developing criteria for establishing interrater reliability of specific items: applications to assessment of adaptive behavior. *American Journal of Mental Deficiency* 86(2): 127–137.

Constitution of India | Legislative Department | India (2024). Available at: https://legislative.gov.in/constitution-of-india/ (accessed 13 August 2024).

Dalberg Advisors (2019) Understanding Indian sanitation workers, and finding solutions for their challenges. Available at: https://dalberg.com/our-ideas/understanding-indian-sanitation-workers-and-finding-solutions-their-challenges/.

Davis LL (1992) Instrument review: Getting the most from a panel of experts. *Applied Nursing Research* 5(4): 194–197.

Department of Social Justice and Empowerment - Government of India (2024). Available at: https://socialjustice.gov.in/ (accessed 24 August 2024).

Devakumar D, Selvarajah S, Abubakar I, et al. (2022) Racism, xenophobia, discrimination, and the determination of health. *The Lancet* 400(10368). Elsevier: 2097–2108.

Dhyani A, Gaidhane A, Choudhari SG, et al. (2022) Strengthening Response Toward Promoting Mental Health in India: A Narrative Review. *Cureus* 14(10): e30435.

Farrelly S, Jeffery D, Rüsch N, et al. (2015) The link between mental health-related discrimination and suicidality: service user perspectives. *Psychological Medicine* 45(10): 2013–2022.

Fleiss et al (2003) The Measurement of Interrater Agreement. In: *Statistical Methods for Rates and Proportions*. John Wiley & Sons, Ltd, pp. 598–626. Available at:

https://onlinelibrary.wiley.com/doi/abs/10.1002/0471445428.ch18 (accessed 25 April 2025).

Gada NP, Shukla R, Kumar P, et al. (2023) Assessment of occupational health hazards and associated morbidities in sanitation workers of a metropolitan city in India: a cross-sectional study. *International Journal Of Community Medicine And Public Health* 10(10): 3771–3777.

Garg P and Kumar R (2019) Study of Depression, Anxiety and Stress among Class IV Workers in a Medical College in Delhi. *Indian Journal of Social Psychiatry* 35(1): 57.

Giri et al., (2011) Giri: Occupational stress among sewage workers - Scopus. Available at: https://www.scopus.com/record/display.uri?eid=2-s2.0-81455139262&origin=inward&txGid=f82579ad0bdae00fdb3b70e9d70f48a0 (accessed 30 March 2025).

Haynes SN, Richard DCS and Kubany ES (1995) Content validity in psychological assessment: A functional approach to concepts and methods. *Psychological Assessment* 7(3). US: American Psychological Association: 238–247.

K R (2019) A Lens to Understand Sanitation Workers and their Health Status in India. *Journal of Pharmacy Practice and Community Medicine* 5: 36–37.

Kadam DH, Gawde N and Darokar SS (2023) 'Sick Guardians of Public Health': A Qualitative Inquiry into Caste, Occupation and Health among Sanitation Workers of Solid Waste Management, Mumbai Municipal Corporation, India, from a Social Epidemiology Lens. *Contemporary Voice of Dalit*. SAGE Publications India: 2455328X231168782.

Kaur S (2022) The Social Exclusion Faced by Urban Sanitation Workers from Rukhi and Balmiki Community in Mumbai. In: Kale RK and Acharya SS (eds) *Mapping Identity-Induced Marginalisation in India : Inclusion and Access in the Land of Unequal Opportunities*. Singapore: Springer Nature, pp. 261–271. Available at: https://doi.org/10.1007/978-981-19-3128-4_15 (accessed 11 August 2024).

Koo TK and Li MY (2016) A Guideline of Selecting and Reporting Intraclass Correlation Coefficients for Reliability Research. *Journal of Chiropractic Medicine* 15(2): 155–163.

Krieger N (1990) Racial and gender discrimination: risk factors for high blood pressure? *Social Science & Medicine (1982)* 30(12): 1273–1281.

Krieger N (2014) Discrimination and health inequities. *International Journal of Health Services: Planning, Administration, Evaluation* 44(4): 643–710.

Krieger N and Sidney S (1996) Racial discrimination and blood pressure: the CARDIA Study of young black and white adults. *American Journal of Public Health* 86(10): 1370–1378.

Krieger N, Smith K, Naishadham D, et al. (2005) Experiences of discrimination: validity and reliability of a self-report measure for population health research on racism and health. *Social Science & Medicine (1982)* 61(7): 1576–1596.

Krishnamurthi G and Krishnaswami C (2020) Title VII and Caste Discrimination. 3725938, SSRN Scholarly Paper. Rochester, NY. Available at: https://papers.ssrn.com/abstract=3725938 (accessed 13 August 2024).

Kumar K and Shetty DR (2024) Safai Karamchari (Sanitary Workers)/Scavenger Community and Risk of Coronavirus (COVID-19) Pandemic in India. *Contemporary Voice of Dalit* 16(1). SAGE Publications India: 101–110.

Lakshman A (2024) 92% of workers cleaning urban sewers, septic tanks are from SC, ST, OBC groups. *The Hindu*, 29 September. Available at: https://www.thehindu.com/news/national/92-of-workers-cleaning-urban-sewers-septic-tanks-are-from-sc-st-obc-groups/article68697861.ece (accessed 7 October 2024).

Lange-Maia BS, James BD, Capuano AW, et al. (2024) Everyday Discrimination Is Associated With Higher Odds of Hospitalizations Among Older African Americans. *The Journals of Gerontology. Series A, Biological Sciences and Medical Sciences* 79(5): glae089.

Lynn MR (1986) Determination and quantification of content validity. *Nursing Research* 35(6). US: Lippincott Williams & Wilkins: 382–385.

Measurement in Nursing and Health Research (2016). Available at: https://www.springerpub.com/measurement-in-nursing-and-health-research-9780826170613.html?srsltid=AfmBOoqtnjbSc_CTiAKpQjfZ7ltvboFzvV4WzSrnG0x7uq7a0VBCLDl2 (accessed 25 April 2025).

Measuring Racial Discrimination (2004) Washington, D.C.: National Academies Press. Available at: http://www.nap.edu/catalog/10887 (accessed 31 March 2025).

Monteiro TS (2022) Intersections of caste, class, and gender in healthcare sanitation work in India: Social work imperatives for restructuring marginalized women's care work. *Asian Social Work and Policy Review* 16(3): 254–264.

Monteiro TS and Nalini R (2021) Mental health at the intersections of marginalization: A conceptual model to explore the mental health concerns of women sanitation workers in India. *Asian Social Work and Policy Review* 15(2). John Wiley & Sons, Ltd: 102–111.

Ormiston CK, Strassle PD, Boyd E, et al. (2024) Discrimination is associated with depression, anxiety, and loneliness symptoms among Asian and Pacific Islander adults during COVID-19 Pandemic. *Scientific Reports* 14(1): 9417.

Oza HH, Lee MG, Boisson S, et al. (2022) Occupational health outcomes among sanitation workers: A systematic review and meta-analysis. *International Journal of Hygiene and Environmental Health* 240: 113907.

Polit DF and Beck CT (2006) The content validity index: are you sure you know what's being reported? Critique and recommendations. *Research in Nursing & Health* 29(5): 489–497.

Polit DF, Beck CT and Owen SV (2007) Is the CVI an acceptable indicator of content validity? Appraisal and recommendations. *Research in Nursing & Health* 30(4): 459–467.

Raghavendra RH and Kumar RA (2022) Sanitation Workers: A Neglected Community of Indian Civilized Society. *Contemporary Voice of Dalit*. SAGE Publications India: 2455328X211069683.

Ravindran TKS and Gaitonde R (eds) (2018) *Health Inequities in India*. Singapore: Springer. Available at: http://link.springer.com/10.1007/978-981-10-5089-3 (accessed 13 August 2024).

Robinson PA and Kerr CC (2024) Quantitative measures of discrimination with application to appointment processes. *PloS One* 19(3): e0299870.

Sathishwaran A and Sethurajakumar P (2022) Social Laxity and Discrimination Against Sanitary Workers – A Case Study Analysis. *Shanlax International Journal of Arts, Science and Humanities* 10(1). 1: 80–85.

Schouler-Ocak M and Moran JK (2023) Racial discrimination and its impact on mental health. *International Review of Psychiatry (Abingdon, England)* 35(3–4): 268–276.

Selvarajah S, Corona Maioli S, Deivanayagam TA, et al. (2022) Racism, xenophobia, and discrimination: mapping pathways to health outcomes. *The Lancet* 400(10368): 2109–2124.

Sen M and Wasow O (2016) Race as a Bundle of Sticks: Designs that Estimate Effects of Seemingly Immutable Characteristics. *Annual Review of Political Science* 19(1): 499–522.

Shetty R, Brahmabhatt A and Nayar S (2022) Caste and Occupation: A Perspective. *The Indian Journal of Occupational Therapy* 54(4): 169.

Soto JA, Dawson-Andoh NA and BeLue R (2011) The relationship between perceived discrimination and Generalized Anxiety Disorder among African Americans, Afro Caribbeans, and non-Hispanic Whites. *Journal of Anxiety Disorders* 25(2): 258–265.

Subramaniam S (2018) Inequities in Health in India and Dalit and Adivasi Populations. In: Ravindran TKS and Gaitonde R (eds) *Health Inequities in India: A Synthesis of Recent Evidence*. Singapore: Springer, pp. 97–120. Available at: https://doi.org/10.1007/978-981-10-5089-3_5 (accessed 8 October 2024).

Subramanyam N and Bouma D (2024) Migrating injustices in the small city: drought-impacted interstate migrant workers' experiences in Tiruppur's sanitation sector. *Climate and Development*: 1–12.

Thoits PA (2010) Stress and health: major findings and policy implications. *Journal of Health and Social Behavior* 51 Suppl: S41-53.

TNUSSP (2024) TNUSSP. In: *TNUSSP*. Available at: https://tnussp.co.in/ (accessed 24 August 2024).

WaterAid India (2023) The Importance of Sanitation Workers | WaterAid India. Available at: https://www.wateraid.org/in/sanitation-workers-a-repository.

WHO (2022) Anxiety disorders. Available at: https://www.who.int/news-room/fact-sheets/detail/anxiety-disorders (accessed 11 August 2024).

WHO (2022) Depressive disorder. Available at: https://www.who.int/news-room/fact-sheets/detail/depression.

WHO (2022) Mental health. Available at: https://www.who.int/news-room/fact-sheets/detail/mental-health-strengthening-our-response.

WHO (2022) Stress. Available at: https://www.who.int/news-room/questions-and-answers/item/stress (accessed 11 August 2024).

Yusoff (2019) ABC of Content Validation and Content Validity Index Calculation. *Education in Medicine Journal* 11(2): 49–54.

Zaidi M (2021) The Indian Caste System: Origins and History. Available at: https://editions.covecollective.org/content/indian-caste-system-origins-and-history (accessed 10 August 2024).

Ziyauddin KM (2022) Situating Hadis' Occupation and Caste: Exclusionary Journey from Manual Workers to Sanitation Workers in India. *CASTE / A Global Journal on Social Exclusion* 3(2). 2: 263–284.

ANNEXURE I

Participant Information Sheet Subject

Vanakkam! I am Dr K. Vigneshwaran, currently pursuing a Master of Public Health (MPH) at Achutha Menon Centre for Health Science Studies (AMCHSS), Sree Chitra Tirunal Institute for Medical Sciences and Technology, Trivandrum, Kerala. As part of my coursework, I need to do a research study. I have chosen to do my study on the health of sanitation workers. The title of the study is Extent of Negative Emotional States - Depression, Anxiety, and Stress Among Sanitation Workers with a Focus on "Self-Reported Discrimination" in Dindigul Municipal Corporation, Tamilnadu. I am doing this research study, under the guidance of Dr Rakhal Gaitonde, who is a professor at my institute.

You are being invited to participate in this research study. Before you decide whether or not to participate in this study, you must understand why the research is being done and what it will involve. Please read/listen to the information sheet and the consent form carefully and don't hesitate to ask if you have any doubts.

Purpose of the study:

I am interested in exploring the various health problems that sanitation workers face not only due to their jobs but also due to the fact that most of the sanitation workers belong to the SC category. In this study I would like to focus on the mental health of sanitation workers and its relationship with the various forms of discrimination they face.

Procedure:

If you are willing to participate in the study, you will be asked a few questions which will include some on basic personal information, a few questions about your job, and your perception of how society treats you. I will also ask a few questions regarding health-related behavior and general lifestyle habits. Additionally, we will use a few standard tools to assess your mental health and any experience of discrimination. I will use a tool called DASS-21, and one called EOD for this. The interview will take approximately 30-35 minutes of your valuable time.

Potential risks and discomfort:

Participating in the study imposes no risk to your health. You will be asked some questions regarding discrimination you perceive which may not be pleasant to recall. In case you are not happy with answering these questions you are free to take a break or withdraw from the study.

Possible benefits:

Your participation in the study will not give any direct benefit to you now other than knowing your Depression Anxiety and Stress levels. If you become very distressed, I will refer you to a counselor who can guide you through possible ways of tackling it. However, the results of the study will help us to understand the relationship between Discrimination and Mental health outcomes.

Cost and financial benefit:

There is no cost for participation in this study. Participation is completely voluntary, and no payment will be provided.

Confidentiality:

Information obtained in this study will be kept strictly confidential. A participant identification number will be assigned to each participant which will help to maintain the strict confidentiality of the data collected. Your name will not be used in reporting information in publications or reports.

Withdrawal from the study:

Your participation in the study will be completely voluntary. You are free and have the right to withdraw at any time during the study. There will be no penalty for withdrawal or not participating in the study.

Contact information:

If you have any research-related questions, you may contact me, a co-investigator or the member secretary of our institute's ethics committee at the following address:

Dr K Vigneshwaran
Principal Investigator
MPH 2023, AMCHSS, SCTIMST
Contact Number: 8778292689

Email: vigneshchellam003@gmail.com

Dr Srinivas G
Member Secretary
Institutional Ethics Committee
SCTIMST, Trivandrum- 695011
Office: 0471-2524689
Email:iec.mem.sec@sctimst.ac.in

Co-investigator:
Dr Rakhal Gaitonde
Professor
AMCHSS, SCTIMST,
Medical College (PO),
Thiruvananthapuram-11
Office: 0471-254241

Contact Details of the Counseling Center:
Dr.S.Dean Wesley
M.B.B.S., MD., Psychiatry
Contact Number: 0451-2426667
Phone: 73736 26665

Participant Information Sheet (Experts – Review)

Vanakam! I am Dr K. Vigneshwaran, currently pursuing a Master of Public Health (MPH) at Achutha Menon Centre for Health Science Studies (AMCHSS), Sree Chitra Tirunal Institute for Medical Sciences and Technology, Trivandrum, Kerala.

As part of my coursework, I need to do a research study. I have chosen to do my study on the health of sanitation workers. The title of the study is Extent of Negative Emotional States - Depression, Anxiety, and Stress Among Sanitation Workers with a Focus on "Self-Reported Discrimination" in Dindigul Municipal Corporation, Tamilnadu. I am doing this research study, under the guidance of Dr Rakhal Gaitonde, who is a professor at my institute.

As part of this study, I am seeking the opinions of eminent persons who will be able to offer guidance on this. Given your experience in your area of work, I would like your opinions on the questionnaire that will be "Translated" for this study.

One of the objectives of my study is to translate the "Experiences of Discrimination" (EOD) Scale into the Tamil language and validate the translation to test the reliability and validity of the translated scale.

This would take approximately 10-20 minutes of your valuable time. Kindly read the enclosed questionnaire and give your comments on the appropriateness of the questions.

Participating in this study imposes no risk to you. There is no direct benefit for you from this study but from a public health viewpoint, your information may prove to be of great importance for developing a tool to measure discrimination.

Your contributions will be acknowledged as part of all reports or publications that are developed from the research. Your participation in this study is voluntary and you have the right to withdraw your participation at any time, without any explanation.

This study is reviewed by the SCTIMST-IEC. If you have any doubt regarding the study please feel free to contact me and if in case you need further clarification you can contact the member secretary, of the Institute Ethics Committee, The contact details a given below.

Dr K Vigneshwaran
Principal Investigator
MPH 2023, AMCHSS, SCTIMST
Contact Number: 8778292689

Dr Srinivas G
Member secretary
Institutional Ethics Committee
SCTIMST, Trivandrum- 695011

Office: 0471-2524689

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Co-investigator:
Dr Rakhal Gaitonde
Professor
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Office: 0471-254241

Contact Details of the Counseling Center:
Dr.S.Dean Wesley
M.B.B.S., MD., Psychiatry
Contact Number: 0451-2426667
Phone: 73736 26665

Participant Information Sheet – (cognitive Interview)

Vanakam! I am Dr K. Vigneshwaran, currently pursuing a Master of Public Health (MPH) at Achutha Menon Centre for Health Science Studies (AMCHSS), Sree Chitra Tirunal Institute for Medical Sciences and Technology, Trivandrum, Kerala.

As part of my coursework, I need to do a research study. I have chosen to do my study on the health of sanitation workers. The title of the study is Extent of Negative Emotional States - Depression, Anxiety, and Stress Among Sanitation Workers with a Focus on "Self-Reported Discrimination" in Dindigul Municipal Corporation, Tamilnadu. I am doing this research study, under the guidance of Dr Rakhal Gaitonde, who is a professor at my institute.

As part of this study, I am undertaking the opinions of the target population for this study consists of sanitation workers and people who are not participating in the study as a member of this population. Given your experience as a sanitation worker, I would like your feedback on the questionnaire that will "Translated" for this study.

One of the objectives of my study is to translate the "Experiences of Discrimination" (EOD) Scale into the Tamil language and validate the translation to test the reliability and validity of the translated scale.

This would take approximately 10-20 minutes of your valuable time. Kindly listen to the questionnaire and give me your comments if you feel difficult to understand.

Participating in this study imposes no risk to you. There is no direct benefit for you from this study but from a public health viewpoint, your information may prove to be of great importance for understanding the discrimination.

You will not be identified in any of the reports or publications that are developed from the research. Your participation in this study is voluntary and you have the right to withdraw your participation at any time during the interview without any explanation. Refusal to participate will not involve any penalty.

This study is reviewed by the SCTIMST-IEC. If you have any doubt regarding the study please feel free to contact me and if in case you need further clarification you can contact the member secretary, of the Institute Ethics Committee, The contact details a given below.

Contact information:

If you have any research-related questions, you may contact me, a co-investigator, or the member secretary of our institute's ethics committee at the following address:

Dr K Vigneshwaran
Principal Investigator
MPH 2023, AMCHSS, SCTIMST
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Dr Srinivas G
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Co-investigator:
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Office: 0471-254241

Contact Details of the Counseling Center:
Dr.S.Dean Wesley
M.B.B.S., MD., Psychiatry
Contact Number: 0451-2426667
Phone: 73736 26665

ANNEXURE II

Informed Consent Form (Subject)

I confirm that I have read, heard, and understood the information regarding the study titled “Extent of Negative Emotional States - Depression, Anxiety, and Stress Among Sanitation Workers with a Focus on “Self-Reported Discrimination” in Dindigul Municipal Corporation, Tamilnadu” All my questions about this study have been answered to my satisfaction. I understand that my identity and personal information will be kept confidential, and that my participation is voluntary. I am free to withdraw at any time, without providing a reason and without any consequences. I also understand that, as part of the research process, I may be contacted again to confirm some of my responses, which will take approximately 10 minutes of my time; however, only a few participants will be asked to complete this additional step. By signing this form, I agree to participate in this study. A copy of this form has been given to me.

Date:
Place:

Name of the participant Signature/Thumb impression

Witness (In case of Thumb impression)

Principal Investigator Signature

Informed Consent Form (Experts – Review)

I confirm that I have read and understood the information provided regarding my role as an expert reviewer for the study titled, Extent of Negative Emotional States - Depression, Anxiety, and Stress Among Sanitation Workers with a Focus on "Self-Reported Discrimination" in Dindigul Municipal Corporation, Tamilnadu. All my questions about this review process have been answered to my satisfaction.

I understand that any information I provide will be solely for the purpose of content validation. My participation is voluntary, and I am free to withdraw from this review at any time without giving a reason.

By signing below, I agree to participate as a content validity expert for this study. A copy of this form has been provided to me for my records.

Date:

Place:

Name of the participant Signature

Principal Investigator Signature

Informed Consent Form for Cognitive Interview

I confirm that I have read and understood the information regarding my participation in the cognitive interview for the study titled, Extent of Negative Emotional States - Depression, Anxiety, and Stress Among Sanitation Workers with a Focus on "Self-Reported Discrimination" in Dindigul Municipal Corporation, Tamilnadu. All my questions about this process have been answered to my satisfaction.

I also understand that my identity and the information I provide during the interview will be kept confidential. My participation is voluntary, and I am free to withdraw at any time, without giving a reason.

By signing below, I agree to participate in this cognitive interview. A copy of this consent form has been provided to me for my records.

Date:

Place:

Name of the participant Signature/Thumb impression

Witness (In case of Thumb impression)

Principal Investigator Signature

ANNEXURE III

Templates

Template for content validity rating by experts – Self-administered, collected by Principal Investigator

Question	Response
Name (Optional)	
Designation of the expert	

"Experience of Discrimination" – Both English and Tamil versions are given

English and Tamil versions of each item of the tool are given below.

For each item, answer the questions given below.

Question	Response
Does the translated statement indicate the same as that of the original English statement?	☐ Yes ☐ No
If "No," please explain why it is different and suggest how it should be modified.	
Is there a chance of cultural variation in meaning?	☐ Yes ☐ No
If yes, can you explain the possible cultural variation and How can this be addressed or resolved?	
Overall, how would you rate the relevance of the translation?	☐ Not relevant ☐ Somewhat relevant ☐ Quite relevant ☐ Highly relevant

Thank you very much for your time.

Template for cognitive interview of Experience of Discrimination (EOD)

Interview by Principal Investigator (Tamil Version)

"EOD" Tamil versions are given:

Listen to the scale from beginning to end. For questions where the participants ask for doubts, clarify the doubts. After that, the investigator will ask the following questions for each.

Question	Response
What did you understand in this when I asked this question?	
Your response to this question is (read out participants response). Can you help me understand the reason for your response?	

Thank you very much for your time

ANNEXURE IV

Questionnaire and scales

Questionnaire

This questionnaire has been developed based on the Conceptual Framework.

Unique Identification No: | | | | |

(First 1 digit: Sex code, middle 1 digit Permanent or temporary workers code, and last 2 digit's serial number of name list code)

Date:

Interview Schedule

Respondent details and socio-economic status		
SL.NO	**QUESTIONS**	**RESPONSE**
1	What is your age? (in completed years)	
1.1	What is your gender?	□ 1- Male □ 2- Female □ 3- others
1.2	What is the highest level of education you have completed?	□ 1- No formal education □ 2- Primary (1st to 5th) □ 3- Secondary (6th to 10th) □ 4- Higher Secondary (10th to 12th) □ 5- Diploma □ 6- Undergraduate (UG) □ 7- Postgraduate (PG) □ 8- PhD
1.3	Is the house where you live owned by you, rented, or provided by the government/municipality?	□ 1- I own it □ 2- I rent it □ 3- Provided by the government
1.4	How many people, including yourself, live in your household on a regular basis? (In the past 6months)	

1.5	Colour of the ration card	□ AYY (Antyodaya card Yellow Colour) □ White (Colour) □ Green (Colour)
1.6	Which social category do you belong to? Specify your sub-caste.	□ 1- General □ 2- OBC □ 3- SC □ 4- ST □ 5- Do not want to reveal
1.7	What religion or belief system do you practice?	□ 1- Hinduism □ 2- Islam □ 3- Christianity □ 4- Buddhism □ 5- Do not want to reveal
Employment Details		
SL.NO	**QUESTIONS**	**RESPONSE**
2	What is the nature of your employment in sanitation work?	□ 1- Permanent □ 2- Temporary
2.1	How many total years have you worked in sanitation?	
	How many years as a temporary worker? (joined as a temporary worker currently temporary)	
	How many years as a permanent worker? (joined as a permanent worker)	
	If you transitioned from temporary to permanent, how many years as a permanent worker? (joined as temporary and currently permanent)	
2.2	What are your current duties and responsibilities in the sanitation sector?	□ 1- Street Sweeper □ 2- Garbage Collector □ 3- Drain Cleaner

	(as per classification of Corporation / Municipality)	□ 4- Rotationally we will do all the work mentioned above
2.3	What were your parents' occupations? Could you recall what type of job did your grandparents do?	□ 1- Related to sanitation work □ 2- Other (Specify) □ 1- Related to sanitation work □ 2- Other (Specify) □ 3- Cannot recall
2.4	Do other members of your family in your generation work in the sanitation sector?	□ 1- Yes □ 2- No □ 3- Not Sure
2.5	What do you think is the main reason for -the choice of your employment?	□ 1- Socioeconomic Status □ 2- Region of Residence □ 3- Family Tradition □ 4- Other (specify)
2.6	Did you ever feel your social background determined your job?	□ 1- Yes □ 2- No
2.7	If you had the chance to get a different job, would you choose it? (If 'Yes' is selected, ask leading questions) If Yes What would be the reason for choosing a different job? (you can choose multiple options) (If 'No' is selected, ask leading questions)	□ 1- Yes □ 2- No □ 1- Wanted to break the tradition □ 2- Freedom from this job □ 3- To get better recognition □ 4- Others (Specify) □ 1- This profession has become habitual □ 2- Fear of discrimination in other jobs □ 3- Thinking this is my fate □ 4- There were no opportunities □ 5- Others (Specify)

	If No What would be the reason for NOT choosing a different job?	

Occupation based discrimination		
SL.NO	**QUESTIONS**	**RESPONSE**
3	Did you ever feel that people treat you differently when you come to collect waste in the morning? How do people respond or react when you come to collect waste in the morning? What is the feeling you get in this regard?	□ 1- Yes □ 2- No □ 1- I think they treat me as an equal. □ 2- I feel that they avoid or ignore me. □ 3- I feel that they behave rudely or disrespectfully. □ 4- Others (Specify)
3.1	Do people help you with drinking water when you are in need while working?	□ 1- Yes □ 2- No
3.2	Do people allow you to enter their houses if you need to use the toilet in an emergency while working? (If 'No' is selected, ask leading questions) If No What is the reason for this?	□ 1- Yes □ 2- No □ 3- I never ask because I feel they won't allow me. □ 1- I believe it's because of my job. □ 2- It might be because they don't trust strangers. □ 3- Others (Specify)
3.3	Have you ever felt treated differently by those around you? If "Yes"	□ 1- Yes □ 2- No □ 1- Maybe because of my job. □ 2- They don't see me as an equal.

	What is the reason for this?	□ 3- Others (Specify)
3.4	Have you ever felt treated unfairly or differently by others in public places because of your work? If Yes If you're comfortable sharing, can you describe when this happened? What was the situation like?	□ 1- Yes □ 2- No
3.5	Have you ever felt left out or treated differently by others in the general community because of your job, background, or identity?	□ 1- Yes □ 2- No
Behavior's		
SL.NO	**QUESTIONS**	**RESPONSE**
4	When you feel stressed, what activities or strategies do you use to reduce your stress?	□ Specify
4.1	Have you ever consumed alcohol? If Yes For how many years have you been consuming alcohol?	□ 1- Yes □ 2- No □ 1- Less than 1 year □ 2- 1–5 years □ 3- 6–10 years □ 4- More than 10 years
4.2	Have you ever used tobacco products? If Yes For how many years have you been using tobacco products?	□ 1- Yes □ 2- No □ 1- Less than 1 year □ 2- 1–5 years □ 3- 6–10 years □ 4- More than 10 years

DASS Scale

DASS-Y	**Name:**	**Age:**	**Date:**		
We would like to find out how you have been feeling in THE PAST WEEK. There are some sentences below. Please circle the number which best shows how TRUE each sentence was ofyou during the past week. There are no right or wrong answers.					
If the statement was NOT TRUE of you (in the past week), circle 0. **If the statement was A LITTLE TRUE of you, circle 1.** **If the statement was FAIRLY TRUE of you, circle 2.** **If the statement was VERY TRUE of you, circle 3.**					
1	**I got upset about little things**	**0**	**1**	**2**	**3**
2	**I felt dizzy, like I was about to faint**	**0**	**1**	**2**	**3**
3	**I did not enjoy anything**	**0**	**1**	**2**	**3**
4	**I had trouble breathing (e.g., fast breathing), even though I wasn't exercising and I was not sick.**	**0**	**1**	**2**	**3**
5	**I hated my life**	**0**	**1**	**2**	**3**
6	**I found myself over-reacting to situations**	**0**	**1**	**2**	**3**
7	**My hands felt shaky**	**0**	**1**	**2**	**3**
8	**I was stressing about lots of things**	**0**	**1**	**2**	**3**
9	**I felt terrified**	**0**	**1**	**2**	**3**
10	**There was nothing nice I could look forward to**	**0**	**1**	**2**	**3**
11	**I was easily irritated**	**0**	**1**	**2**	**3**
12	**I found it difficult to relax**	**0**	**1**	**2**	**3**
13	**I could not stop feeling sad**	**0**	**1**	**2**	**3**
14	**I got annoyed when people interrupted me**	**0**	**1**	**2**	**3**
15	**I felt like I was about to panic**	**0**	**1**	**2**	**3**
16	**I hated myself**	**0**	**1**	**2**	**3**
17	**I felt like I was no good**	**0**	**1**	**2**	**3**
18	**I was easily annoyed**	**0**	**1**	**2**	**3**
19	**I could feel my heart beating really fast, even though I hadn't done any hard exercise**	**0**	**1**	**2**	**3**
20	**I felt scared for no good reason**	**0**	**1**	**2**	**3**
21	**I felt that life was terrible**	**0**	**1**	**2**	**3**

Experience of Discrimination Scale

Experience of Discrimination		
Measure	**Questions**	**Stem**
Experience of Discrimination	**Introduction:** This next section is going to ask about how you and others like you are treated, and how you typically respond."	
Response to unfair treatment	If you feel you have been treated unfairly, do you usually	1- Accept it as a fact of life
		2- Try to do something about it
	If you have been treated unfairly, do you usually	1- Talk to other people about it
		2- keep it to yourself
Discrimination	Have you ever experienced discrimination, been prevented from doing something, or been hassled or made to feel inferior in any of the following situations because of your race, ethnicity, or color?	For each situation to which the participant replied "Yes" or "No" the follow-up questions were: How many times did this happen? 1- Once 2- Two or three times 3- Four or more times
	At school?	
	Getting hired or getting a job?	
	Getting Housing?	
	Getting medical care?	
	Getting service in a store or restaurant?	
	Getting credit, bank loans, or a mortgage?	
	On the street or in a public setting?	
	From the police or in the courts?	

ANNEXURE V

Tamil version of Participant Information Sheet Subject

பங்கேற்பாளர் தகவல் தாள்

வணக்கம்! நான் டாக்டர் கு. விக்னேஸ்வரன், தற்போது அச்சுதா மேனன் சுகாதார அறிவியல் ஆய்வுகளுக்கான மையத்தில் (AMCHSS), ஸ்ரீ சித்ரா திருநாள் மருத்துவ அறிவியல் மற்றும் தொழில்நுட்ப நிறுவனம், திருவனந்தபுரம், கேரளாவில் பொது சுகாதார முதுகலை (MPH) படித்து வருகிறேன். எனது பாடநெறி வேலையின் ஒரு பகுதியாக, நான் ஒரு ஆராய்ச்சி ஆய்வு செய்ய வேண்டும். துப்புரவுத் தொழிலாளர்களின் உடல்நலம் குறித்து எனது ஆய்வை செய்யத் தேர்ந்தெடுத்துள்ளேன். ஆய்வின் தலைப்பு" ***எதிர்மறை உணர்ச்சி நிலைகளின் அளவு - "சுய-அறிக்கை பாகுபாடு" மீது கவனம் செலுத்தி துப்புரவுத் தொழிலாளர்களிடையே மனச்சோர்வு, பதட்டம் மற்றும் மன அழுத்தம் ஆகியவை கண்டறிய***" எனது நிறுவனத்தில் பேராசிரியராக இருக்கும் டாக்டர் ராகல் கெய்டோண்டேவின் வழிகாட்டுதலின் கீழ் இந்த ஆராய்ச்சி ஆய்வை செய்கிறேன்.

இந்த ஆராய்ச்சி ஆய்வில் பங்கேற்க நீங்கள் அழைக்கப்படுகிறீர்கள். இந்த ஆய்வில் பங்கேற்கலாமா வேண்டாமா என்பதை நீங்கள் தீர்மானிப்பதற்கு முன், ஆராய்ச்சி ஏன் செய்யப்படுகிறது, அதில் என்ன அடங்கும் என்பதை நீங்கள் புரிந்து கொள்ள வேண்டும். தயவுசெய்து தகவல் தாள் மற்றும் ஒப்புதல் படிவத்தை கவனமாகப் படிக்கவும் / கேட்கவும். உங்களுக்கு ஏதேனும் சந்தேகம் இருந்தால் கேட்க தயங்காதீர்கள்.

ஆய்வின் நோக்கம்:

துப்புரவுத் தொழிலாளர்கள் தங்கள் வேலை காரணமாக மட்டுமல்லாமல், பல்வேறு உடல்நலப் பிரச்சினைகளை எதிர்கொள்கிறார்கள. துப்புரவுத் தொழிலாளர்களில் பெரும்பாலோர் எஸ்சி வகுப்பைச் சேர்ந்தவர்கள். இந்த ஆய்வில், துப்புரவுத் தொழிலாளர்களின் மன ஆரோக்கியம் மற்றும் அவர்கள் எதிர்கொள்ளும் பல்வேறு வகையான பாகுபாடுகளுடன் அதன் இடையிலான உறவைக் ஆராய்வதில் நான் ஆர்வமாக உள்ளேன்.

செயல்முறை:

நீங்கள் ஆய்வில் பங்கேற்க தயாராக இருந்தால், உங்களிடம் சில கேள்விகள் கேட்கப்படும், அதில் சில அடிப்படை தனிப்பட்ட தகவல்கள், உங்கள் வேலையைப் பற்றிய சில கேள்விகள் மற்றும் சமூகம் உங்களை எவ்வாறு நடத்துகிறது என்பதைப் பற்றிய உங்கள் கருத்து ஆகியவை அடங்கும். உடல்நலம் தொடர்பான நடத்தை மற்றும் பொதுவான

வாழ்க்கை முறை பழக்கம் குறித்தும் சில கேள்விகளைக் கேட்பேன். கூடுதலாக, உங்கள் மன ஆரோக்கியம் மற்றும் பாகுபாட்டின் எந்தவொரு அனுபவத்தையும் மதிப்பிடுவதற்கு சில நிலையான கருவிகளைப் பயன்படுத்துவோம். இதற்காக DASS-21 என்ற கருவியையும், EOD என்ற கருவியையும் பயன்படுத்துவேன். நேர்காணல் உங்கள் மதிப்புமிக்க நேரத்தின் சுமார் 30-35 நிமிடங்கள் எடுக்கும்.

ஆபத்த மற்றும் அசௌகரியங்கள்:

ஆய்வில் பங்கேற்பது உங்கள் ஆரோக்கியத்திற்கு எந்த ஆபத்தையும் ஏற்படுத்தாது. நீங்கள் உணரும் பாகுபாடு தொடர்பான சில கேள்விகள் உங்களிடம் கேட்கப்படும், அவை நினைவுகூர இனிமையாக இருக்காது. இந்த கேள்விகளுக்கு பதிலளிப்பதில் நீங்கள் மகிழ்ச்சியடையவில்லை என்றால், நீங்கள் ஓய்வு எடுக்கவோ அல்லது ஆய்வில் இருந்து விலகவோ சுதந்திரமாக இருக்கிறீர்கள்.

சாத்தியமான நன்மைகள்:

ஆய்வில் நீங்கள் பங்கேற்பது உங்கள் மனச்சோர்வு கவலை மற்றும் மன அழுத்த அளவை அறிந்து கொள்வதைத் தவிர இப்போது உங்களுக்கு எந்த நேரடி நன்மையையும் அளிக்காது. நீங்கள் மிகவும் மன உளைச்சலுக்கு ஆளானால், அதைச் சமாளிப்பதற்கான சாத்தியமான வழிகளின் மூலம் உங்களுக்கு வழிகாட்டக்கூடிய ஒரு ஆலோசகரிடம் நான் உங்களைக் குறிப்பிடுவேன். இருப்பினும், ஆய்வின் முடிவுகள் பாகுபாடு மற்றும் மனநல விளைவுகளுக்கு இடையிலான உறவைப் புரிந்துகொள்ள உதவும்.

செலவு மற்றும் நிதி நன்மை:

இந்த ஆய்வில் பங்கேற்பதற்கு எந்த செலவும் இல்லை. பங்கேற்பு முற்றிலும் தன்னார்வமானது, எந்த கட்டணமும் வழங்கப்படாது.

இரகசியத்தன்மை:

இந்த ஆய்வில் பெறப்பட்ட தகவல்கள் கண்டிப்பாக ரகசியமாக வைக்கப்படும். ஒவ்வொரு பங்கேற்பாளருக்கும் ஒரு பங்கேற்பாளர் அடையாள எண் ஒதுக்கப்படும், இது சேகரிக்கப்பட்ட தரவின் கடுமையான ரகசியத்தன்மையை பராமரிக்க உதவும். வெளியீடுகள் அல்லது அறிக்கைகளில் தகவல்களைப் புகாரளிப்பதில் உங்கள் பெயர் பயன்படுத்தப்படாது.

ஆய்வில் இருந்து விலகல்:

ஆய்வில் உங்கள் பங்கேற்பு முற்றிலும் தன்னார்வமாக இருக்கும். எந்த நேரத்திலும், ஒரு காரணம் கூறாமல், பின்விளைவுகள் ஏதுமின்றி இந்த ஆய்வில் இருந்து எந்த நேரத்திலும்

விலகுவதற்கு உங்களுக்கு உரிமை உண்டு, ஆய்வில் பங்கேற்காததற்கோ எந்த அபராதமும் இருக்காது.

தொடர்பு தகவல்:

உங்களிடம் ஆராய்ச்சி தொடர்பான கேள்விகள் ஏதேனும் இருந்தால், நீங்கள் என்னை, அல்லது ஒரு இணை புலனாய்வாளர்/வழிகாட்டி அல்லது எங்கள் நிறுவனத்தின் நெறிமுறைக் குழுவின் உறுப்பினர் செயலாளரை பின்வரும் முகவரியில் தொடர்பு கொள்ளலாம்:

டாக்டர் கு. விக்னேஸ்வரன்
முதன்மை ஆய்வாளர்
MPH 2022, AMCHSS, SCTIMST
தொடர்பு எண்: 8778292689
மின்னஞ்சல்: vigneshchellam003@gmail.com

டாக்டர் ஸ்ரீனிவாஸ் ஜி
உறுப்பினர் செயலாளர்
நிறுவன நெறிமுறைக் குழு
SCTIMST, திருவனந்தபுரம் - 695011
அலுவலகம்: 04712524689
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இணை புலனாய்வாளர்/வழிகாட்டி:
டாக்டர் ராகல் கைடோன்டே
பேராசிரியர்
AMCHSS, SCTIMST,
மருத்துவக் கல்லூரி (அஞ்சல்),
திருவனந்தபுரம்-11
அலுவலகம்: 0471-254241

ஆலோசனை மையத்தின் தொடர்பு விவரங்கள்:
டாக்டர் எஸ்.டீன் வெஸ்லி
எம். பி. பி. எஸ்., எம்.டி., உளவியல்
தொடர்பு எண்: 0451-2426667
தொலைபேசி: 73736 26665

பங்கேற்பாளர் தகவல் தாள் (நிபுணர்கள்-விமர்சனம்)

வணக்கம்! நான் டாக்டர் கு. விக்னேஸ்வரன், தற்போது அச்சுதா மேனன் சுகாதார அறிவியல் ஆய்வுகளுக்கான மையத்தில் (AMCHSS), ஸ்ரீ சித்ரா திருநாள் மருத்துவ அறிவியல் மற்றும் தொழில்நுட்ப நிறுவனம், திருவனந்தபுரம், கேரளாவில் பொது சுகாதார முதுகலை (MPH) படித்து வருகிறேன். எனது பாடநெறி வேலையின் ஒரு பகுதியாக, நான் ஒரு ஆராய்ச்சி ஆய்வு செய்ய வேண்டும். துப்புரவுத் தொழிலாளர்களின் உடல்நலம் குறித்து எனது ஆய்வை செய்யத் தேர்ந்தெடுத்துள்ளேன். ஆய்வின் தலைப்பு" ***எதிர்மறை உணர்ச்சி நிலைகளின் அளவு - "சுய-அறிக்கை பாகுபாடு" மீது கவனம் செலுத்தி துப்புரவுத் தொழிலாளர்களிடையே மனச்சோர்வு, பதட்டம் மற்றும் மன அழுத்தம் ஆகியவை கண்டறிய.*** எனது நிறுவனத்தில் பேராசிரியராக இருக்கும் டாக்டர் ராகல் கெய்டோண்டேவின் வழிகாட்டுதலின் கீழ் இந்த ஆராய்ச்சி ஆய்வை செய்கிறேன்.

இந்த ஆய்வின் ஒரு பகுதியாக, இது குறித்த வழிகாட்டுதல்களை வழங்கக்கூடிய பிரபல நபர்களின் கருத்துக்களை நான் நாடுகிறேன். உங்கள் வேலைப் பகுதியில் உங்கள் அனுபவத்தைப் பொறுத்தவரை, இந்த ஆய்வுக்கு "மொழிபெயர்க்கப்பட்ட" கேள்வித்தாள் குறித்த உங்கள் கருத்துக்களை நான் விரும்புகிறேன்.

எனது ஆய்வின் நோக்கங்களில் ஒன்று, "பாகுபாட்டின் அனுபவங்கள்" (EOD) அளவை தமிழ் மொழியில் மொழிபெயர்ப்பதும், மொழிபெயர்க்கப்பட்ட அளவின் நம்பகத்தன்மையையும் செல்லுபடியையும் சோதிக்க மொழிபெயர்ப்பை சரிபார்ப்பதும் ஆகும். இது உங்கள் மதிப்புமிக்க நேரத்தின் சுமார் 10-20 நிமிடங்கள் எடுக்கும். இணைக்கப்பட்ட கேள்வித்தாளை தயவுசெய்து படித்து, கேள்விகளின் பொருத்தமற்ற தன்மை குறித்து உங்கள் கருத்துகளைத் தெரிவிக்கவும். இந்த ஆய்வில் பங்கேற்பது உங்களுக்கு எந்த ஆபத்தையும் ஏற்படுத்தாது. இந்த ஆய்வில் இருந்து உங்களுக்கு நேரடி நன்மை எதுவும் இல்லை, ஆனால் பொது சுகாதாரக் கண்ணோட்டத்தில், பாகுபாட்டை அளவிடுவதற்கான ஒரு கருவியை உருவாக்குவதற்கு உங்கள் தகவல் மிகவும் முக்கியத்துவம் வாய்ந்ததாக நிரூபிக்கப்படலாம். ஆராய்ச்சியில் இருந்து உருவாக்கப்பட்ட அனைத்து அறிக்கைகள் அல்லது வெளியீடுகளின் ஒரு பகுதியாக உங்கள் பங்களிப்புகள் ஒப்புக் கொள்ளப்படும். இந்த ஆய்வில் நீங்கள் பங்கேற்பது தன்னார்வமானது மற்றும் எந்த விளக்கமும் இல்லாமல் எந்த நேரத்திலும் உங்கள் பங்கேற்பை திரும்பப் பெற உங்களுக்கு உரிமை உண்டு. இந்த ஆய்வை SCTIMST-IEC மதிப்பாய்வு செய்கிறது. ஆய்வு தொடர்பாக உங்களுக்கு ஏதேனும் சந்தேகம் இருந்தால் தயவுசெய்து என்னை தொடர்பு கொள்ளவும்,

மேலும் விளக்கம் தேவைப்பட்டால் நீங்கள் நிறுவன நெறிமுறைக் குழுவின் உறுப்பினர் செயலாளரை தொடர்பு கொள்ளலாம், தொடர்பு விவரங்கள் கீழே கொடுக்கப்பட்டுள்ளன

டாக்டர் கு. விக்னேஸ்வரன்

முதன்மை ஆய்வாளர்

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அலுவலகம்: 04712524689

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டாக்டர் ராகல் கைடோன்டே

பேராசிரியர்

AMCHSS, SCTIMST,

மருத்துவக் கல்லூரி (அஞ்சல்),

திருவனந்தபுரம்-11

அலுவலகம்: 0471-254241

ஆலோசனை மையத்தின் தொடர்பு விவரங்கள்:

டாக்டர் எஸ்.டீன் வெஸ்லி

எம். பி. பி. எஸ்., எம்.டி., உளவியல்

தொடர்பு எண்: 0451-2426667

தொலைபேசி: 73736 26665

பங்கேற்பாளர் தகவல் தாள் (அறிவாற்றல் நேர்காணல்)

வணக்கம்! நான் டாக்டர் கு. விக்னேஸ்வரன், தற்போது அச்சுதா மேனன் சுகாதார அறிவியல் ஆய்வுகளுக்கான மையத்தில் (AMCHSS), ஸ்ரீ சித்ரா திருநாள் மருத்துவ அறிவியல் மற்றும் தொழில்நுட்ப நிறுவனம், திருவனந்தபுரம், கேரளாவில் பொது சுகாதார முதுகலை (MPH) படித்து வருகிறேன். எனது பாடநெறி வேலையின் ஒரு பகுதியாக, நான் ஒரு ஆராய்ச்சி ஆய்வு செய்ய வேண்டும். துப்புரவுத் தொழிலாளர்களின் உடல்நலம் குறித்து எனது ஆய்வை செய்யத் தேர்ந்தெடுத்துள்ளேன். ஆய்வின் தலைப்பு" **எதிர்மறை உணர்ச்சி நிலைகளின் அளவு - "சுய-அறிக்கை பாகுபாடு" மீது கவனம் செலுத்தி துப்புரவுத் தொழிலாளர்களிடையே மனச்சோர்வு, பதட்டம் மற்றும் மன அழுத்தம் ஆகியவை கண்டறிய**" எனது நிறுவனத்தில் பேராசிரியராக இருக்கும் டாக்டர் ராகல் கெய்டோண்டேவின் வழிகாட்டுதலின் கீழ் இந்த ஆராய்ச்சி ஆய்வை செய்கிறேன்.

இந்த ஆய்வின் ஒரு பகுதியாக, துப்புரவுத் தொழிலாளர்கள் மற்றும் இந்த மக்கள் தொகையில் உறுப்பினராக ஆய்வில் பங்கேற்காத நபர்களைக் கொண்ட இந்த ஆய்வுக்கான இலக்கு மக்களின் கருத்துக்களை நான் மேற்கொள்கிறேன். துப்புரவுத் தொழிலாளியாக உங்கள் அனுபவத்தைப் பொறுத்தவரை, இந்த ஆய்வுக்கு "மொழிபெயர்க்கப்பட்ட" கேள்வித்தாள் குறித்த உங்கள் கருத்தை விரும்புகிறேன்

எனது ஆய்வின் நோக்கங்களில் ஒன்று, "பாகுபாட்டின் அனுபவங்கள்" (EOD) அளவை தமிழ் மொழியில் மொழிபெயர்ப்பதும், மொழிபெயர்க்கப்பட்ட அளவின் நம்பகத்தன்மையையும் செல்லுபடியையும் சோதிக்க மொழிபெயர்ப்பை சரிபார்ப்பதும் ஆகும்.

இது உங்கள் மதிப்புமிக்க நேரத்தின் சுமார் 10-20 நிமிடங்கள் எடுக்கும். தயவுசெய்து கேள்வித்தாளைக் கேளுங்கள், புரிந்து கொள்ள கடினமாக உணர்ந்தால் உங்கள் கருத்துகளை எனக்குத் தெரிவிக்கவும்.

இந்த ஆய்வில் பங்கேற்பது உங்களுக்கு எந்த ஆபத்தையும் ஏற்படுத்தாது. இந்த ஆய்வில் இருந்து உங்களுக்கு நேரடி நன்மை எதுவும் இல்லை, ஆனால் பொது சுகாதார கண்ணோட்டத்தில், பாகுபாட்டைப் புரிந்துகொள்வதற்கு உங்கள் தகவல்கள் மிகவும் முக்கியத்துவம் வாய்ந்தவை என்பதை நிரூபிக்கக்கூடும்.

ஆராய்ச்சியில் இருந்து உருவாக்கப்பட்ட எந்த அறிக்கைகள் அல்லது வெளியீடுகளிலும் நீங்கள் அடையாளம் காணப்பட மாட்டீர்கள். இந்த ஆய்வில் நீங்கள் பங்கேற்பது

தன்னார்வமானது மற்றும் நேர்காணலின் போது எந்த நேரத்திலும் எந்த விளக்கமும் இல்லாமல் உங்கள் பங்கேற்பை திரும்பப் பெற உங்களுக்கு உரிமை உண்டு. பங்கேற்க மறுப்பது எந்த அபராதத்தையும் உள்ளடக்காது.

இந்த ஆய்வை SCTIMST-IEC மதிப்பாய்வு செய்கிறது. ஆய்வு தொடர்பாக உங்களுக்கு ஏதேனும் சந்தேகம் இருந்தால் தயவுசெய்து என்னை தொடர்பு கொள்ளவும், மேலும் விளக்கம் தேவைப்பட்டால் நீங்கள் நிறுவன நெறிமுறைக் குழுவின் உறுப்பினர் செயலாளரை தொடர்பு கொள்ளலாம், தொடர்பு விவரங்கள் கீழே கொடுக்கப்பட்டுள்ளன.

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ANNEXURE VI

Tamil version of Informed Consent Form

தகவலறிந்த ஒப்புதல் படிவம் (பங்கேற்பாளர்கள்)

*ஆய்வு தொடர்பான தகவல்களை நான் படித்தேன்/கேட்டுள்ளேன் மற்றும் புரிந்துகொண்டேன் என்பதை உறுதி செய்கிறேன்.***"எதிர்மறை உணர்ச்சி நிலைகளின் அளவு - "சுய-அறிக்கை பாகுபாடு" மீது கவனம் செலுத்தி துப்புரவுத் தொழிலாளர்களிடையே மனச்சோர்வு, பதட்டம் மற்றும் மன அழுத்தம் ஆகியவை கண்டறிய***. இந்த ஆய்வு தொடர்பான எனது அனைத்து கேள்விகளுக்கும் பதிலளிக்கப்பட்டுள்ளன. இந்த ஆய்வின் சாத்தியமான தீங்குகள் மற்றும் நன்மைகள் (ஏதேனும் இருந்தால்) எனக்கு விளக்கப்பட்டுள்ளது. எனது அடையாளம் மற்றும் தனிப்பட்ட தகவல்கள் ரகசியமாக வைக்கப்படும் என்பதையும் நான் புரிந்துகொள்கிறேன். எனது பங்கேற்பு தன்னார்வமானது என்பதையும், எந்த நேரத்திலும், ஒரு காரணம் கூறாமல், பின்விளைவுகள் ஏதுமின்றி இந்த ஆய்வில் இருந்து எந்த நேரத்திலும் விலகுவதற்கு எனக்கு சுதந்திரம் உள்ளது என்பதையும் புரிந்துகொள்கிறேன். ஆராய்ச்சி செயல்முறையின் ஒரு பகுதியாக, எனது சில பதில்களை உறுதிப்படுத்த என்னை மீண்டும் தொடர்பு கொள்ளலாம் என்பதையும் நான் புரிந்துகொள்கிறேன், இது எனது நேரத்தின் சுமார் 10 நிமிடங்கள் எடுக்கும்; இருப்பினும், ஒரு சில பங்கேற்பாளர்கள் மட்டுமே இந்த கூடுதல் படிநிலையை முடிக்கும்படி கேட்கப்படுவார்கள். இந்த படிவத்தில் கையெழுத்திடுவதன் மூலம், இந்த ஆய்வில் பங்கேற்க ஒப்புக்கொள்கிறேன். இந்த படிவத்தின் நகல் எனக்கு வழங்கப்பட்டுள்ளது.*

தேதி:

இடம்:

பங்கேற்பாளர் பெயர் *கையொப்பம் /கட்டைவிரல் பதிவு*

முதன்மை ஆய்வாளர் *கையொப்பம்*

தகவலறிந்த ஒப்புதல் படிவம் (நிபுணர்கள்-விமர்சனம்)

எதிர்மறை உணர்ச்சி நிலைகளின் அளவு - "சுய-அறிக்கை பாகுபாடு" மீது கவனம் செலுத்தி துப்புரவுத் தொழிலாளர்களிடையே மனச்சோர்வு, பதட்டம் மற்றும் மன அழுத்தம் ஆகியவை கண்டறிய. *என்ற தலைப்பில் ஆய்வுக்கான நிபுணர் மதிப்பாய்வாளராக எனது பங்கு குறித்து வழங்கப்பட்ட தகவல்களை நான் படித்து புரிந்து கொண்டேன் என்பதை உறுதிப்படுத்துகிறேன்."இந்த மறுஆய்வு செயல்முறை குறித்த எனது எல்லா கேள்விகளுக்கும் எனது திருப்திக்கு பதிலளிக்கப்பட்டுள்ளது. நான் வழங்கும் எந்தவொரு தகவலும் உள்ளடக்க சரிபார்ப்பு நோக்கத்திற்காக மட்டுமே இருக்கும் என்பதை நான் புரிந்துகொள்கிறேன். எனது பங்கேற்பு தன்னார்வமானது, எந்த நேரத்திலும் ஒரு காரணத்தையும் தெரிவிக்காமல் இந்த மதிப்பாய்விலிருந்து விலக நான் சுதந்திரமாக இருக்கிறேன். கீழே கையொப்பமிடுவதன் மூலம், இந்த ஆய்வுக்கான உள்ளடக்க செல்லுபடியாகும் நிபுணராக பங்கேற்க ஒப்புக்கொள்கிறேன். இந்த படிவத்தின் நகல் எனது பதிவுகளுக்காக எனக்கு வழங்கப்பட்டுள்ளது.*

தேதி:

இடம்:

பங்கேற்பாளர் பெயர் கையொப்பம்

முதன்மை ஆய்வாளர் கையொப்பம்

தகவலறிந்த ஒப்புதல் படிவம் (அறிவாற்றல் நேர்காணல்)

எதிர்மறை உணர்ச்சி நிலைகளின் அளவு - "சுய-அறிக்கை பாகுபாடு" மீது கவனம் செலுத்தி துப்புரவுத் தொழிலாளர்களிடையே மனச்சோர்வு, பதட்டம் மற்றும் மன அழுத்தம் ஆகியவை கண்டறிய *" என்ற தலைப்பில் ஆய்வுக்கான அறிவாற்றல் நேர்காணலில் எனது பங்கு குறித்து வழங்கப்பட்ட தகவல்களை நான் படித்து புரிந்து கொண்டேன் என்பதை உறுதிப்படுத்துகிறேன்."இந்த செயல்முறை குறித்த எனது எல்லா கேள்விகளுக்கும் எனது திருப்திக்கு பதிலளிக்கப்பட்டுள்ளது.*

எனது அடையாளம் மற்றும் நேர்காணலின் போது நான் வழங்கும் தகவல்கள் ரகசியமாக வைக்கப்படும் என்பதையும் நான் புரிந்துகொள்கிறேன். எனது பங்கேற்பு தன்னார்வமானது, எந்த நேரத்திலும் ஒரு காரணத்தையும் தெரிவிக்காமல் திரும்பப் பெற நான் சுதந்திரமாக இருக்கிறேன்.

கீழே கையொப்பமிடுவதன் மூலம், இந்த அறிவாற்றல் நேர்காணலில் பங்கேற்க ஒப்புக்கொள்கிறேன். இந்த ஒப்புதல் படிவத்தின் நகல் எனது பதிவுகளுக்காக எனக்கு வழங்கப்பட்டுள்ளது.

தேதி:

இடம்:

பங்கேற்பாளர் பெயர் *கையொப்பம் /கட்டைவிரல் பதிவு*

முதன்மை ஆய்வாளர் *கையொப்பம்*

ANNEXURE VII

Tamil version of the Questionnaire and scales

அடையாள எண்:

(முதல் 1 இலக்கம்: செக்ஸ் குறியீடு, நடுத்தர 1 இலக்க நிரந்தர அல்லது தற்காலிக தொழிலாளர்கள் குறியீடு மற்றும் கடைசி 1 இலக்கத்தின் பங்கேற்பாளர் குறியீடு)

தேதி:

நேர்காணல் அட்டவணை

வாடிக்கையாளர் விவரங்கள் மற்றும் சமூக பொருளாதார நிலை		
எண்	**கேள்விகள்**	**பதில்**
1	உங்கள் வயது என்ன? (முழு வருடங்களில்)	
1.1	உங்கள் பாலினம் என்ன?	☐ 1- ஆண் ☐ 2- பெண் ☐ 3- மற்றவர்கள்
1.2	நீங்கள் முடித்த கல்வியின் மிக உயர்ந்த நிலை என்ன?	☐ 1- முறையான கல்வி இல் ☐ 2- முதன்மை (1st to 5th) ☐ 3- இரண்டாம் நிலை (6th to 10th) ☐ 4- உயர்நிலை (10th to 12th) ☐ 5- டிப்ளமோ ☐ 6- இளங்கலை ☐ 7- முதுகலை ☐ 8- பிஎச்டி
1.3	நீங்கள் வசிக்கும் வீடு உங்களுக்கு சொந்தமானதா, வாடகைக்கு விடப்பட்டதா அல்லது அரசாங்கம்/நகராட்சியால் வழங்கப்பட்டதா?	☐ 1-நான் அதை சொந்தமாக வைத்திருக்கிறேன் ☐ 2 - நான் அதை வாடகைக்கு விடுகிறேன் ☐ 3 - அரசு வழங்கியது
1.4	உங்கள் வீட்டில் நீங்கள் உட்பட எத்தனை பேர் வழக்கமான வாழ்கிறார்கள்?	
1.5	ரேஷன் கார்டின் நிறம் என்ன?	☐ AAY- அந்தியோதயா அட்டை ☐ பச்சை அட்டை ☐ வெள்ளை அட்டை

1.6	நீங்கள் எந்த சமூக வகையைச் சேர்ந்தவர்? உங்கள் துணை சாதியைக் குறிப்பிடவும்.	☐ 1- பொது ☐ 2- ஓபிசி ☐ 3- ஆதி திராவிடர் ☐ 4- எஸ்டி ☐ 5- வெளிப்படுத்த விரும்பவில்லை
1.7	நீங்கள் எந்த மதம் அல்லது நம்பிக்கை முறையை கடைப்பிடிக்கிறீர்கள்?	☐ 1- இந்து மதம் ☐ 2- இஸ்லாம் ☐ 3- கிறிஸ்தவம் ☐ 4- புத்தமதம் ☐ 5- வெளிப்படுத்த விரும்பவில்லை
வேலைவாய்ப்பு விவரங்கள்		
எண்	**கேள்விகள்**	**பதில்**
2	துப்புரவுப் பணியில் உங்கள் வேலைவாய்ப்பின் தன்மை என்ன?	☐ 1- நிரந்தர பணியாளர் ☐ 2- தற்காலிக பணியாளர்
2.1	துப்புரவு பணியில் மொத்தம் எத்தனை ஆண்டுகள் பணியாற்றியுள்ளீர்கள்?	
	தற்காலிக தொழிலாளியாக எத்தனை ஆண்டுகள்? (தற்காலிக தொழிலாளியாக தற்போது தற்காலிகமாக இணைந்துள்ளார்)	
	நிரந்தர தொழிலாளியாக எத்தனை ஆண்டுகள்? (நிரந்தர தொழிலாளியாக சேர்ந்தார்)	
	நீங்கள் தற்காலிகத்திலிருந்து நிரந்தரமாக மாறினால், நிரந்தர தொழிலாளியாக எத்தனை ஆண்டுகள்? (தற்காலிகமாகவும் தற்போது நிரந்தரமாகவும் இணைந்தது)	
2.2	துப்புரவுத் துறையில் உங்கள் தற்போதைய கடமைகள் மற்றும் பொறுப்புகள் என்ன? (மாநகராட்சி / நகராட்சி வகைப்பாட்டின் படி)	☐ 1- தெரு துப்புரவாளர் ☐ 2- குப்பை சேகரிப்பாளர் ☐ 3- வடிகால் துப்புரவாளர் ☐ 4- சுழற்சி முறையில் மேலே குறிப்பிட்டுள்ள அனைத்து வேலைகளையும் செய்வோம்

2.3	உங்கள் பெற்றோரின் தொழில்கள் என்ன?	☐ 1- சுகாதாரப் பணி தொடர்பானது ☐ 2- மற்றவை (குறிப்பிடவும்)
	உங்கள் தாத்தா பாட்டி எந்த வகையான வேலையைச் செய்தார்கள் என்பதை நினைவுபடுத்த முடியுமா?	☐ 1- சுகாதாரப் பணி தொடர்பானது ☐ 2- மற்றவை (குறிப்பிடவும்) ☐ 3- நினைவுகூர முடியவில்லை
2.4	உங்கள் தலைமுறையில் உங்கள் குடும்பத்தின் மற்ற உறுப்பினர்கள் துப்புரவுத் துறையில் வேலை செய்கிறார்களா?	☐ 1- சுகாதாரப் பணிகள் ☐ 2- மற்றவை (குறிப்பிடவும்)
2.5	உங்கள் வேலைவாய்ப்புக்கு முக்கிய காரணம் என்ன என்று நீங்கள் நினைக்கிறீர்கள்?	☐ 1-சமூக பொருளாதார நிலை ☐ 2-வசிக்கும் பகுதி ☐ 3-குடும்ப பாரம்பரியம் ☐ 4-மற்றவை (குறிப்பிடவும்)
2.6	உங்கள் சமூக பின்னணி உங்கள் வேலையை தீர்மானிப்பதை நீங்கள் எப்போதாவது உணர்ந்தீர்களா?	☐ 1- ஆம் ☐ 2- இல்லை ☐
2.8	வேறு வேலையைப் பெற உங்களுக்கு வாய்ப்பு கிடைத்தால், அதைத் தேர்ந்தெடுப்பீர்களா? ('ஆம்' தேர்ந்தெடுக்கப்பட்டால், முன்னணி கேள்விகளைக் கேளுங்கள்)	☐ 1- ஆம் ☐ 2- இல்லை ☐ 1- பாரம்பரியத்தை உடைக்க விரும்பினார் ☐ 2-இந்த வேலையிலிருந்து சுதந்திரம்

	ஆம் என்றால் வேறு வேலையைத் தேர்ந்தெடுப்பதற்கான காரணம் என்னவாக இருக்கும்? (நீங்கள் பல விருப்பங்களை தேர்வு செய்யலாம்) ('இல்லை' தேர்ந்தெடுக்கப்பட்டால், முன்னணி கேள்விகளைக் கேளுங்கள்) இல்லை என்றால் வேறு வேலையைத் தேர்வு செய்யாமல் இருப்பதற்கான காரணம் என்னவாக இருக்கும்?	☐ 3-சிறந்த அங்கீகாரத்தைப் பெற ☐ 4-மற்றவை (குறிப்பிடவும்) ☐ 1-இந்த தொழில் பழக்கமாகிவிட்டது ☐ 2-பிற வேலைகளில் பாகுபாடு குறித்த பயம் ☐ 3-இது என் விதி என்று நினைப்பது ☐ 4-வாய்ப்புகள் இல்லை ☐ 5-மற்றவை (குறிப்பிடவும்)
தொழில் சார்ந்த பாகுபாடு		
எண்	**கேள்விகள்**	**பதில்**
3	நீங்கள் காலையில் கழிவுகளை சேகரிக்க வரும்போது மக்கள் உங்களை வித்தியாசமாக நடத்துகிறார்கள் என்று நீங்கள் எப்போதாவது உணர்ந்தீர்களா? நீங்கள் காலையில் கழிவுகளை சேகரிக்க வரும்போது மக்கள் எவ்வாறு பதிலளிப்பார்கள் அல்லது எதிர்வினையாற்றுவார்கள்? இந்த விஷயத்தில் நீங்கள் பெறும் உணர்வு என்ன?	☐ 1- ஆம் ☐ 2- இல்லை ☐ 1 - அவர்கள் என்னை ஒரு சமமாக கருதுகிறார்கள் என்று நினைக்கிறேன். ☐ 2-அவர்கள் என்னைத் தவிர்க்கிறார்கள் அல்லது புறக்கணிக்கிறார்கள் என்று நான் உணர்கிறேன். ☐ 3 - அவர்கள் முரட்டுத்தனமாக அல்லது அவமரியாதையுடன்

		நடந்துகொள்வதாக நான் உணர்கிறேன். ☐ 4-மற்றவை (குறிப்பிடவும்)
3.1	வேலை செய்யும் போது உங்களுக்குத் தேவைப்படும்போது மக்கள் குடிநீருக்கு உதவுகிறார்களா?	☐ 1- ஆம் ☐ 2- இல்லை
3.2	வேலை செய்யும் போது அவசரகாலத்தில் கழிப்பறையைப் பயன்படுத்த வேண்டுமானால் மக்கள் தங்கள் வீடுகளுக்குள் நுழைய அனுமதிக்கிறார்களா? ('இல்லை' தேர்ந்தெடுக்கப்பட்டால், முன்னணி கேள்விகளைக் கேளுங்கள்) இல்லை என்றால் இதற்கான காரணம் என்ன?	☐ 1- ஆம் ☐ 2- இல்லை ☐ 3- நான் ஒருபோதும் கேட்க மாட்டேன், ஏனென்றால் அவர்கள் என்னை அனுமதிக்க மாட்டார்கள் என்று நினைக்கிறேன். ☐ 1- இது எனது வேலை காரணமாக இருப்பதாக நான் நம்புகிறேன். ☐ 2- அவர்கள் அந்நியர்களை நம்பாததால் இருக்கலாம். ☐ 3- மற்றவை (குறிப்பிடவும்)
3.3	உங்களைச் சுற்றியுள்ளவர்களால் வித்தியாசமாக நடத்தப்படுவதை நீங்கள் எப்போதாவது உணர்ந்திருக்கிறீர்களா? ('**ஆம்**' தேர்ந்தெடுக்கப்பட்டால், முன்னணி கேள்விகளைக் கேளுங்கள்) இதற்கான காரணம் என்ன?	☐ 1- ஆம் ☐ 2- இல்லை ☐ 1- ஒருவேளை என் வேலை காரணமாக இருக்கலாம். ☐ 2- அவர்கள் என்னை சமமாக பார்க்கவில்லை. ☐ 3- மற்றவை (குறிப்பிடவும்)
3.4	உங்கள் வேலையின் காரணமாக பொது இடங்களில் மற்றவர்களால் நியாயமற்ற முறையில் அல்லது வித்தியாசமாக	☐ 1- ஆம் ☐ 2- இல்லை

	நடத்தப்படுவதை நீங்கள் எப்போதாவது உணர்ந்திருக்கிறீர்களா? ஆம் என்றால் நீங்கள் பகிர்வதற்கு வசதியாக இருந்தால், இது எப்போது நடந்தது என்பதை விவரிக்க முடியுமா? நிலைமை எப்படி இருந்தது?	
3.5	உங்கள் வேலை, பின்னணி அல்லது அடையாளம் காரணமாக பொது சமூகத்தில் உள்ள மற்றவர்களால் நீங்கள் எப்போதாவது விட்டுவிட்டதாக அல்லது வித்தியாசமாக நடத்தப்பட்டதாக உணர்ந்திருக்கிறீர்களா?	□ 1- ஆம் □ 2- இல்லை
	நடத்தை	
எண்	**கேள்விகள்**	**பதில்**
4	நீங்கள் மன அழுத்தத்தை உணரும்போது, உங்கள் மன அழுத்தத்தைக் குறைக்க என்ன நடவடிக்கைகள் அல்லது உத்திகளைப் பயன்படுத்துகிறீர்கள்?	□ குறிப்பிடவும்
4.1	நீங்கள் எப்போதாவது மது அருந்தியிருக்கிறீர்களா? ஆம் என்றால் நீங்கள் எத்தனை ஆண்டுகளாக மது அருந்துகிறீர்கள்?	□ 1- ஆம் □ 2- இல்லை □ 1- 1வருடத்திற்கும் குறைவானது □ 2- 1-5 ஆண்டுகள் □ 3- 6-10 ஆண்டுகள் □ 4-10 ஆண்டுகளுக்கு மேல்

4.2	நீங்கள் எப்போதாவது புகையிலை பொருட்களைப் பயன்படுத்தியிருக்கிறீர்களா?	□ 1- ஆம் □ 2- இல்லை
	ஆம் என்றால் நீங்கள் எத்தனை ஆண்டுகளாக புகையிலை பொருட்களைப் பயன்படுத்துகிறீர்கள்?	□ 1- 1வருடத்திற்கும் குறைவானது □ 2 - 1-5 ஆண்டுகள் □ 3-6-10 ஆண்டுகள் □ 4-10 ஆண்டுகளுக்கு மேல்

தாஸ் -21(மனச்சோர்வு, பதட்டம் மற்றும் மன அழுத்தம் என்பவற்றை மதிப்பிடும் அளவீடு)

பெயர்: …… தேதி: ……

தயவுசெய்து கீழே தரப்பட்டுள்ள ஒவ்வொரு வாக்கியத்தையும் வாசித்து கடந்த வாரத்தில் அது எவ்வளவு தூரம் உங்களுக்கு பெருத்தமாய் இருந்தது என்பதை காட்டும் வகையில் 0, 1, 2, 3 ஆகிய இலக்கங்களில் பொருத்தமானதைச் சுற்றி வட்டமிடவும். இவற்றில் சரி அல்லது பிழையான பதில் என்று எதுவுமில்லை. எந்த ஒரு வாக்கியத்திலும் மிக அதிகளவு நேரத்தை செலவிட வேண்டாம்.

மதிப்பிடும் அளவீடு பின்வருமாறு அமையும்: -

0 - ஒரு போதுமே எனக்கு பொருத்தமாக அமையவில்லை - ஒருபோதும் இல்லை

1 - ஓரளவிற்கு அல்லது சில சமயங்களில் எனக்கு பொருத்தமாக இருந்தது -சில வேளை

2 - குறிபிடத்தக்க அளவுக்கு அல்லது அதிகமான வேளைகளில் பொருத்தமாக இருந்தது – அடிக்கடி

3 - எனக்கு அநேகமான வேளைகளில் அல்லது முற்றிலும் பொருத்தமாக இருந்தது - அநேகமாக எப்போதும்

1	எனக்கு சாதாரண நிலைக்கு மீளுவது கடினமாக இருந்தது	**0**	**1**	**2**	**3**
2	எனது வாய் உலர்ந்திருந்ததை உணரக்கூடியதாக இருந்தது	**0**	**1**	**2**	**3**
3	எனக்கு நல்ல உணர்வு எதனையும் அனுபவிக்க முடியவில்லை	**0**	**1**	**2**	**3**
4	சுவாசிப்பதில் சிரமம் இருப்பதை உணர்ந்தேன். (உ-ம் மிக வேகமான சுவாசம், உடல் களைப்பற்ற நிலையிலும் சுவாசிப்பதற்கு சிரமப்படுதல், அடிக்கடி பெருமூச்சு விடுதல்)	**0**	**1**	**2**	**3**
5	எந்த ஒரு விடயத்தையும் தொடங்கிச் செய்வதற்கு உரிய ஊக்கம் இல்லாமலிருந்தது	**0**	**1**	**2**	**3**
6	சில சூழ்நிலைகளில் நான் அளவுக்கு அதிகமாக எதிர் தாக்கம் காட்ட முனைந்தேன்.	**0**	**1**	**2**	**3**
7	நடுக்கம் ஏற்படுவதாக உணர்ந்தேன். (உ- ம்-: கைகளில்)	**0**	**1**	**2**	**3**
8	நான் அதிகளவில் நரம்புச் சக்தியை உபயோகிக்க வேண்டியிருப்பதாக உணர்ந்தேன்	**0**	**1**	**2**	**3**
9	நான் அதிக பீதியடைந்து என்னை நானே ஒரு முட்டாளாக்கிக் கொள்ளக் கூடிய சந்தர்ப்பங்கள் பற்றி கவலைப் பட்டேன்	**0**	**1**	**2**	**3**
10	எனக்கு வாழ்க்கையில் எந்த எதிர்பார்ப்பும் இல்லை என்பது போல உணர்ந்தேன்	**0**	**1**	**2**	**3**
11	நான் கலவரமடைவதாக உணர்ந்தேன்	**0**	**1**	**2**	**3**
12	என்னை தளர்ச்சியடையச் செய்வது கடினமாக இருந்தது.	**0**	**1**	**2**	**3**
13	நான் கவலையாகவும் மனமுடைந்து இருப்பதாகவும் உணர்ந்தேன்	**0**	**1**	**2**	**3**
14	நான் செய்கின்ற விடயத்தில் வரும் எந்த ஒரு சிறிய தடையையும் என்னால் பொறுத்துக் கொள்ள முடியாமல் இருந்தது	**0**	**1**	**2**	**3**
15	நான் பீதி நிலையை அண்மித்து விட்டதாக உணர்ந்தேன்	**0**	**1**	**2**	**3**
16	எந்தவொரு விடயத்திலும் எனக்கு ஆர்வமாக ஈடுபட இயலாதிருந்தது	**0**	**1**	**2**	**3**
17	நான் ஒன்றுக்கும் பெறுமதி இல்லாத மனிதனாக உணர்ந்தேன்	**0**	**1**	**2**	**3**
18	நான் இலகுவில் மனதளவில் காயப்படுவதாக உணர்ந்தேன்	**0**	**1**	**2**	**3**
19	உடல் பிரயத்தனமின்றியே என் இதயத்துடிப்பினை உணர்ந்தேன்.(உ-ம் : இதயத்துடிப்பு வேகம் அதிகரிப்பது, ஒரு இதயம் ஒரு துடிப்பை தவற விடுவது போலிருப்பது),	**0**	**1**	**2**	**3**
20	பொருத்தமான காரணமெதுவுமின்றி எனக்கு பயம் ஏற்பட்டது.	**0**	**1**	**2**	**3**
21	வாழ்க்கை அர்த்தமற்றது என்று உணர்ந்தேன்.	**0**	**1**	**2**	**3**

அளவுகோல்	கேள்வி	கிளை கேள்விகள்
பாகுபாடு குறித்து அனுபவம்	அறிமுகம்: நீங்களும் உங்களைப் போன்றவர்களும் எவ்வாறு நடத்தப்பட்டீர்கள்? அதற்கு நீங்கள் எந்த விதத்தில் எதிர்வினையாற்றுகிறீர்கள்? என்பது குறித்து அடுத்த பகுதியில் கேட்கப்படும்	
நியாயமற்று நடத்தப்பட்டதற்கு எதிர்வினை	நீங்கள் **ஏற்றத்தாழ் வாகமுறையில்** நடத்தப்பட்டதாக, ஒரு வேளை உணரும்போது என்ன செய்வீர்கள்? (சரியானப் பதிலை தேர்வு செய்யவும்)	1- அதை வாழ்வின் இயல்பென ஏற்றுக் கொள்வேன்.
		2- அது குறித்து எதாவது செய்ய முயற்சி செய்வேன்
	நீங்கள் ஏற்றத்தாழ் வாக முறையில் நடத்தப்படும் போது எவ்விதம் **எதிர் கருத்து தெரிவிப்பீர்கள்** (சரியானப் பதிலை தேர்வுசெய்யவும்)	1- அதைப் பற்றி மற்றவர்களிடம் பேசுவேன்.
		2- எனது உள்ளேயே வைத்துக்கொள்வேன்.
பாகுபாடு	நீங்கள் சாதி பெயரால் கீழ்க்கண்ட சூழ்நிலையில் பாகுபாடடோடு நடத்தப்பட்டீர்களா • எதாவது செய்ய விடாமல் தடுக்கப்பட்டிர்களா? • தொந்தரவு படுத்தப்பட்டிர்களா? (அல்லது) • தாழ்வாக உணரும்படி செய்யப் பட்டிர்களா?	ஒவ்வொரு சூழ்நிலைக்கும் பங்கேற்பாளர் 'ஆம்' என்று கூறும் போதும் கேட்கப்பட வேண்டிய துணை கேள்விகள் ('இல்லை' என்று சொல்வதற்கு பதிலாக) எத்தனைமுறை இது நடந்தது 1-ஒரு முறை 2-இரண்டு (அ) மூன்று முறை 3-நான்கு அல்லது அதற்கு அதிகமாக
	1-பள்ளிக்கூடத்தில்	
	2 -வேலைக்கான தேர்வு செய்யப்படும் நேரத்தில் (அ) வேலை கிடைக்கும் போது	
	3 -வேலை பார்க்கும் இடத்தில்	
	4 -வீடு கிடைப்பதில்	
	5 -மருத்துவ சிகிச்சை கிடைக்கும் போது	
	6 -கடையிலோ (அ) உணவகத்தில் சேவை பெறுகையில்	
	7 -கடன், வங்கிக்கடன் கிடைப்பதில் (அ) அடகு வைப்பதில்	
	8 -தெருவில் (அ) பொது இடங்களில் (அ) **கோவில்களில்**	
	9 - **கிராம சபை கூட்டத்தில்**	

ANNEXURE VIII

Translation process

Version 1 After Reconciliation and adoption

அளவுகோல்	கேள்வி	கிளை கேள்விகள்
பாகுபாடு குறித்து அனுபவம்	அறிமுகம்: நீங்களும் உங்களைப் போன்றவர்களும் எவ்வாறு நடத்தப்பட்டீர்கள்? அதற்கு நீங்கள் எந்த விதத்தில் எதிர்வினையாற்றுகிறீர்கள்? என்பது குறித்து அடுத்த பகுதியில் கேட்கப்படும்	
நியாயமற்று நடத்தப்பட்டதற்கு எதிர்வினை	நீங்கள் நியாயமற்ற முறையில் நடத்தப்பட்டதாக, ஒரு வேளை உணரும்போது என்ன செய்வீர்கள்? (தயவுகூர்ந்து சரியானப் பதிலை தேர்வு செய்யவும்)	1- அதை வாழ்வின் இயல்பென ஏற்றுக் கொள்வேன்.
		2- அது குறித்து எதாவது செய்ய முயற்சி செய்வேன்
	நீங்கள் நியாயமற்ற முறையில் நடத்தப்படும் போது எவ்விதம் எதிர்வினையாற்றுவீர்கள் (தயவுகூர்ந்து சரியானப் பதிலை தேர்வுசெய்யவும்)	1- அதைப் பற்றி மற்றவர்களிடம் பேசுவேன்.
		2- எனது உள்ளேயே வைத்துக்கொள்வேன்.
பாகுபாடு	நீங்கள் சாதி பெயரால் கீழ்க்கண்ட சூழ்நிலையில் பாகுபாடடோடு நடத்தப்பட்டீர்களா • எதாவது செய்ய விடாமல் தடுக்கப்பட்டிர்களா? • தொந்தரவு படுத்தப்பட்டிர்களா? (அல்லது) • தாழ்வாக உணரும்படி செய்யப் பட்டிர்களா?	ஒவ்வொரு சூழ்நிலைக்கும் பங்கேற்பாளர் 'ஆம்' என்று கூறும் போதும் கேட்கப்பட வேண்டிய துணை கேள்விகள் ('இல்லை' என்று சொல்வதற்கு எதிராக)
	1-பள்ளிக்கூடத்தில்	எத்தனைமுறை இது நடந்தது 1-ஒரு முறை 2-இரண்டு (அ) மூன்று முறை 3-நான்கு அல்லது அதற்கு அதிகமாக
	2 -வேலைக்கான தேர்வு செய்யப்படும் நேரத்தில் (அ) வேலை கிடைக்கும் போது	
	3 -வேலை பார்க்கும் இடத்தில்	
	4 -வீடு கிடைப்பதில்	
	5 -மருத்துவ சிகிச்சை கிடைக்கும் போது	
	6 -கடையிலோ (அ) உணவகத்தில் சேவை பெறுகையில்	
	7 -கடன், வங்கிக்கடன் கிடைப்பதில் (அ) அடகு வைப்பதில்	
	8 -தெருவில் (அ) பொது இடங்களில்	
	9 -காவல் அல்லது நீதிமன்றங்களில்	

Version 2 Based on Experts' suggestions (specifically, Item numbers 8 and 9 in the discrimination section)

அளவுகோல்	கேள்வி	கிளை கேள்விகள்
பாகுபாடு குறித்து அனுபவம்	அறிமுகம்: நீங்களும் உங்களைப் போன்றவர்களும் எவ்வாறு நடத்தப்பட்டீர்கள்? அதற்கு நீங்கள் எந்த விதத்தில் எதிர்வினையாற்றுகிறீர்கள்? என்பது குறித்து அடுத்த பகுதியில் கேட்கப்படும்	
நியாயமற்று நடத்தப்பட்டதற்கு எதிர்வினை	நீங்கள் நியாயமற்ற முறையில் நடத்தப்பட்டதாக, ஒரு வேளை உணரும்போது என்ன செய்வீர்கள்? (சரியானப் பதிலை தேர்வு செய்யவும்)	1- அதை வாழ்வின் இயல்பென ஏற்றுக் கொள்வேன்.
		2- அது குறித்து எதாவது செய்ய முயற்சி செய்வேன்
	நீங்கள் நியாயமற்ற முறையில் நடத்தப்படும் போது எவ்விதம் எதிர்வினையாற்றுவீர்கள் (சரியானப் பதிலை தேர்வுசெய்யவும்)	1- அதைப் பற்றி மற்றவர்களிடம் பேசுவேன்.
		2- எனது உள்ளேயே வைத்துக்கொள்வேன்.
பாகுபாடு	நீங்கள் சாதி பெயரால் கீழ்க்கண்ட சூழ்நிலையில் பாகுபாடடோடு நடத்தப்பட்டீர்களா • எதாவது செய்ய விடாமல் தடுக்கப்பட்டிர்களா? • தொந்தரவு படுத்தப்பட்டிர்களா? (அல்லது) • தாழ்வாக உணரும்படி செய்யப் பட்டிர்களா?	ஒவ்வொரு சூழ்நிலைக்கும் பங்கேற்பாளர் 'ஆம்' என்று கூறும் போதும் கேட்கப்பட வேண்டிய துணை கேள்விகள் ('இல்லை' என்று சொல்வதற்கு பதிலாக) எத்தனைமுறை இது நடந்தது 1-ஒரு முறை 2-இரண்டு (அ) மூன்று முறை 3-நான்கு அல்லது அதற்கு அதிகமாக
	1-பள்ளிக்கூடத்தில்	
	2 -வேலைக்கான தேர்வு செய்யப்படும் நேரத்தில் (அ) வேலை கிடைக்கும் போது	
	3 -வேலை பார்க்கும் இடத்தில்	
	4 -வீடு கிடைப்பதில்	
	5 -மருத்துவ சிகிச்சை கிடைக்கும் போது	
	6 -கடையிலோ (அ) உணவகத்தில் சேவை பெறுகையில்	
	7 -கடன், வங்கிக்கடன் கிடைப்பதில் (அ) அடகு வைப்பதில்	
	8 -தெருவில் (அ) பொது இடங்களில் (அ) **கோவில்களில்**	
	9 - **கிராம சபை கூட்டத்தில்**	

Version 3 Based on Participants' suggestions (Domain 1, Item numbers 1 and in the discrimination section)

அளவுகோல்	கேள்வி	கிளை கேள்விகள்
பாகுபாடு குறித்து அனுபவம்	அறிமுகம்: நீங்களும் உங்களைப் போன்றவர்களும் எவ்வாறு நடத்தப்பட்டீர்கள்? அதற்கு நீங்கள் எந்த விதத்தில் எதிர்வினையாற்றுகிறீர்கள்? என்பது குறித்து அடுத்த பகுதியில் கேட்கப்படும்	
நியாயமற்று நடத்தப்பட்டதற்கு எதிர்வினை	நீங்கள் **ஏற்றத்தாழ் வாகமுறையில்** நடத்தப்பட்டதாக, ஒரு வேளை உணரும்போது என்ன செய்வீர்கள்? (சரியானப் பதிலை தேர்வு செய்யவும்)	1- அதை வாழ்வின் இயல்பென ஏற்றுக் கொள்வேன்.
		2- அது குறித்து எதாவது செய்ய முயற்சி செய்வேன்
	நீங்கள் ஏற்றத்தாழ் வாக முறையில் நடத்தப்படும் போது எவ்விதம் **எதிர் கருத்து தெரிவிப்பீர்கள்** (சரியானப் பதிலை தேர்வுசெய்யவும்)	1- அதைப் பற்றி மற்றவர்களிடம் பேசுவேன்.
		2- எனது உள்ளேயே வைத்துக்கொள்வேன்.
பாகுபாடு	நீங்கள் சாதி பெயரால் கீழ்க்கண்ட சூழ்நிலையில் பாகுபாடடோடு நடத்தப்பட்டீர்களா • எதாவது செய்ய விடாமல் தடுக்கப்பட்டிர்களா? • தொந்தரவு படுத்தப்பட்டிர்களா? (அல்லது) • தாழ்வாக உணரும்படி செய்யப் பட்டிர்களா?	ஒவ்வொரு சூழ்நிலைக்கும் பங்கேற்பாளர் 'ஆம்' என்று கூறும் போதும் கேட்கப்பட வேண்டிய துணை கேள்விகள் ('இல்லை' என்று சொல்வதற்கு பதிலாக) எத்தனைமுறை இது நடந்தது 1-ஒரு முறை 2-இரண்டு (அ) மூன்று முறை 3-நான்கு அல்லது அதற்கு அதிகமாக
	1-பள்ளிக்கூடத்தில்	
	2 -வேலைக்கான தேர்வு செய்யப்படும் நேரத்தில் (அ) வேலை கிடைக்கும் போது	
	3 -வேலை பார்க்கும் இடத்தில்	
	4 -வீடு கிடைப்பதில்	
	5 -மருத்துவ சிகிச்சை கிடைக்கும் போது	
	6 -கடையிலோ (அ) உணவகத்தில் சேவை பெறுகையில்	
	7 -கடன், வங்கிக்கடன் கிடைப்பதில் (அ) அடகு வைப்பதில்	
	8 -தெருவில் (அ) பொது இடங்களில் (அ) **கோவில்களில்**	
	9 - **கிராம சபை கூட்டத்தில்**	

Summary of Cognitive Interviews

Subject 1 Subject 1 is a permanent sanitation worker with three years of experience in the field and a secondary level of education. He suggested that all the questions in the scale were relevant and expressed confidence that people in his community would understand them clearly.
Subject 2 Subject 2 is a temporary sanitation worker with 23 years of experience in the field. Despite having no formal education, he stated that all the questions on the scale were relevant and expressed confidence that everyone would understand them clearly.
Subject 3 Subject 3 is a female sanitation worker with 8 years of experience and a secondary level of education. She suggested replacing the term *நியாயமற்ற* with *ஏற்றத்தாழ் வாக*, as she believes this alternative would be more easily understood by everyone.
Subject 4 Subject 4 is a temporary sanitation worker with 30 years of experience in the field and a secondary level of education. As with Subject 3, he suggested replacing the term *நியாயமற்ற* with *ஏற்றத்தாழ் வாக* to enhance understanding among participants.
Subject 5 Subject 5 is a permanent sanitation worker with 12 years of experience in the field and a secondary level of education. She suggested replacing (Unfairly) the term *நியாயமற்ற* with *ஏற்றத்தாழ் வாக*, and the term (do you usually) *எதிர்வினையாற்றுவீர்கள்* with *எதிர் கருத்து தெரிவிப்பீர்கள்*, as she believes this wording would be clearer and more appropriate.

ANNEXURE IX

IEC Approval Certificate

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

CDSCO Registration No: ECR/189/Inst/KL/2013/RR-24
DHR Registration No:EC/NEW/INST/2022/2775

SCT/IEC/2325/DECEMBER/2024 05.04.2025

Dr. Vigneshwaran K
MPH Student, AMCHSS
SCTIMST, Thiruvananathapuram

Dear Dr. Vigneshwaran,

The Institutional Ethics Committee held on 30th December, 2024, reviewed and discussed your application to conduct the study titled "**EXTENT OF NEGATIVE EMOTIONAL STATES - DEPRESSION, ANXIETY, AND STRESS AMONG SANITATION WORKERS WITH A FOCUS ON "SELF-REPORTED DISCRIMINATION" IN DINDIGUL MUNICIPAL CORPORATION, TAMILNADU" (IEC /2325)** .

Principal Investigator	Dr. Vigneshwaran K, MPH Student, AMCHSS, SCTIMST
Co-Principal Investigator(s)	Dr. Rakhal Gaitone, Professor, AMCHSS, SCTIMST
Duration of the study	6 months

The following members of the Ethics Committee were present at the meeting held on 30th December, 2024

SL. No.	Member Name	Highest Degree	Gender	Scientific /Non Scientific	Affiliation with Institution(s)
1.	Dr. Manoj Murhekar	MD (Preventive & Social Medicine)	Male	Social Scientist	No
2.	Dr. Annapurna.Y	MD	Female	Basic Medical Scientist	No
3	Adv. Priya Kaimal	LLM, MBL	Female	Legal Expert	No
4.	Dr. Indu PV	MBBS, DPM, MPhil, PhD	Female	Clinician	No
5.	Dr. Rejnish Kumar	MBBS,MD ,DNB	Male	Clinician	No
6.	Smt. Rekha Radhakrishnan	M.A (Eng.); B.Ed	Female	Lay person	No
7.	Dr. Biju Soman	MBBS,MD, DPH, MSc, DLSHTM	Male	Basic Medical Scientist	Yes
8.	Dr. Syam K	MBBS, MD, DM	Male	Clinician	Yes
9.	Dr. Srinivas G	PhD	Male	Basic Medical Scientist (Member Secretary)	Yes

The following documents were reviewed:

Original submission

1. *IEC Application Form*
2. *Funding details and Budget*
3. *Covering letter addressed to the Chairperson, IEC, SCTIMST dated 10.12.2024 forwarded by HOD*
4. *Questionnaire in English and Tamil*
5. *Informed Consent Forms in English and Tamil*
6. *Participant Information Sheets in English and Tamil*
7. *Permission letter*
8. *Checklist Form*
9. *Proposal*
10. *Declaration Form*
11. *CV of PI and Co-PI*

Revised submission

1. *Covering letter addressed to the Member Secretary, IEC, SCTIMST dated 13.01.2025*
2. *Responses/amendments made based on the IEC comments*
3. *IEC Recommendation letter*
4. *Proposal*
5. *Participant Information Sheets in English and Tamil*
6. *Informed Consent Forms in English and Tamil*
7. *Interview schedule in English and Tamil*

Revised submission on 26.03.2025

1. *Responses to IEC comments dated 02.04.2025*
2. *Covering letter addressed to the Member Secretary, IEC, SCTIMST dated 26.03.2025 regarding the change of the title and objective of the study*
3. *Proposal*
4. *Participant Information Sheets in English and Tamil*
5. *Informed Consent Forms in English and Tamil*
6. *Interview schedule in English and Tamil*

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 / Guide 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,

Dr. G. Srinivas
Member Secretary, IEC

MEMBER SECRETARY
INSTITUTIONAL ETHICS COMMITTEE (IEC)
SCTIMST, THIRUVANANTHAPURAM

ANNEXURE X

Permission from the Municipal Corporation

PROCEEDINGS OF THE COMMISSIONER DINDIGUL CITY MUNICIPAL CORPORATION.
Present : Thiru. N. Ravichandran,.

Roc No. 10806/2024/H2 **Dated : 18.12.2024**

Sub :	Public Health - Dindigul City Municipal Corporation - Permission to conduct a study on the "Prevalence of depression, anxiety, and stress with a focus on self – reported discrimination among sanitation workers in permission granted –Regarding.
Ref:	The Professor & Head, Achutha Menon Centre for Health Science Studies, Sree Chirta Tirunal Institute for Medical Science and Technology, Trivandrum, Letter Dated 10.10.2024

ORDER :

With reference in cited above letter, Permission is here by granted to Dr.K.Vigneshwaran, a scholar in the Master of Public Health (MPH) program at Achutha Menon Centre for Health Science Studies (AMCHSS) at SCTIMST to conduct a research study titled, "Prevalence of Depression, Anxiety and Stress with a Focus on Self – reported Discrimination among Sanitation Workers in Dindigul City Municipal Corporation."

The study will be conducted from December-2024 to April-2025 and is recognized as part of the MPH dissertation requirements.

Directions:

1. The researcher shall coordinate with the Health and Sanitation Department of Dindigul City Municipal Corporation for access to the study population and required data.
2. Confidentiality of information and adherence to ethical research practices must be ensured at all stages of the study.
3. Any findings or reports generated from the research should be shared with the Dindigul City Municipal Corporation.

S/d . N. Ravichandran.
Commissioner,
Dindigul City Municipal Corporation.

// True Copy//

City Health Officer,
Dindigul City Municipal Corporation.

18/12/2024

To.
Dr.K.Vigneshwaran,
Sree Chirta Tirunal Institute for Medical Science and Technology (SCTIMST)
Thiruvananthapuram, Kerala
Copy to : Dr. Biju Soman, MD, DPH, MBBS, Msc, DLSHTM
Professor & Head,
Achutha Menon Centre for Health Science Studies.
Sree Chirta Tirunal Institute for Medical Science and Technology,
Trivandrum – 695 011, Kerala.

Copy to: The City Health Officer, Dindigul City Municipal Corporation.

ANNEXURE XI

Permission from Dr. Nancy Krieger to translate the EOD scale

HARVARD T.H. CHAN | SCHOOL OF PUBLIC HEALTH
Department of Social and Behavioral Sciences

June 12, 2024

To: K. Vigneswaran/Vignesh Chellam, Sree Chitra Tirunal Institute for Medical Science & Technology

As follow-up to our email exchanges on June 9-June 11, I am sending you this formal letter to state, as I said in my prior email replies:

1) you can access the EOD, in both English & Spanish, at no cost – along with the terms for its use, instructions for how the data should be analyzed and how the scale should be cited, and the validation study -- at: https://www.hsph.harvard.edu/nancy-krieger/resources/

2) you have my written approval to translate the EOD scale into the language you have specified (Tamil) – provided that you cite the original scale in accord with the instructions for its use and citation, and make clear that you have responsibility for the translation.

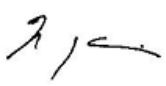
Additionally, as you will see in the publication regarding the EOD at the website to which I directed you, I originally developed the EOD in English, and then worked with a bilingual team to translate it into Spanish. This process involved back-translation, i.e., translating first from English to Spanish, then back-translating the Spanish version into English, as a check on making sure the original meaning in English was conveyed in the Spanish translation. I recommend you also use the methodology of back-translation to improve validity of the scale in Tamil

3) you may also find this open access article to be of interest:

Krieger N. Measures of Racism, Sexism, Heterosexism, and Gender Binarism for Health Equity Research: From Structural Injustice to Embodied Harm-An Ecosocial Analysis. Annu Rev Public Health. 2020 Apr 2;41:37-62. doi: 10.1146/annurev-publhealth-040119-094017. Epub 2019 Nov 25. PMID: 31765272. https://pubmed.ncbi.nlm.nih.gov/31765272/

Please understand that **I cannot be available for any further correspondence about your project**.

Signed,



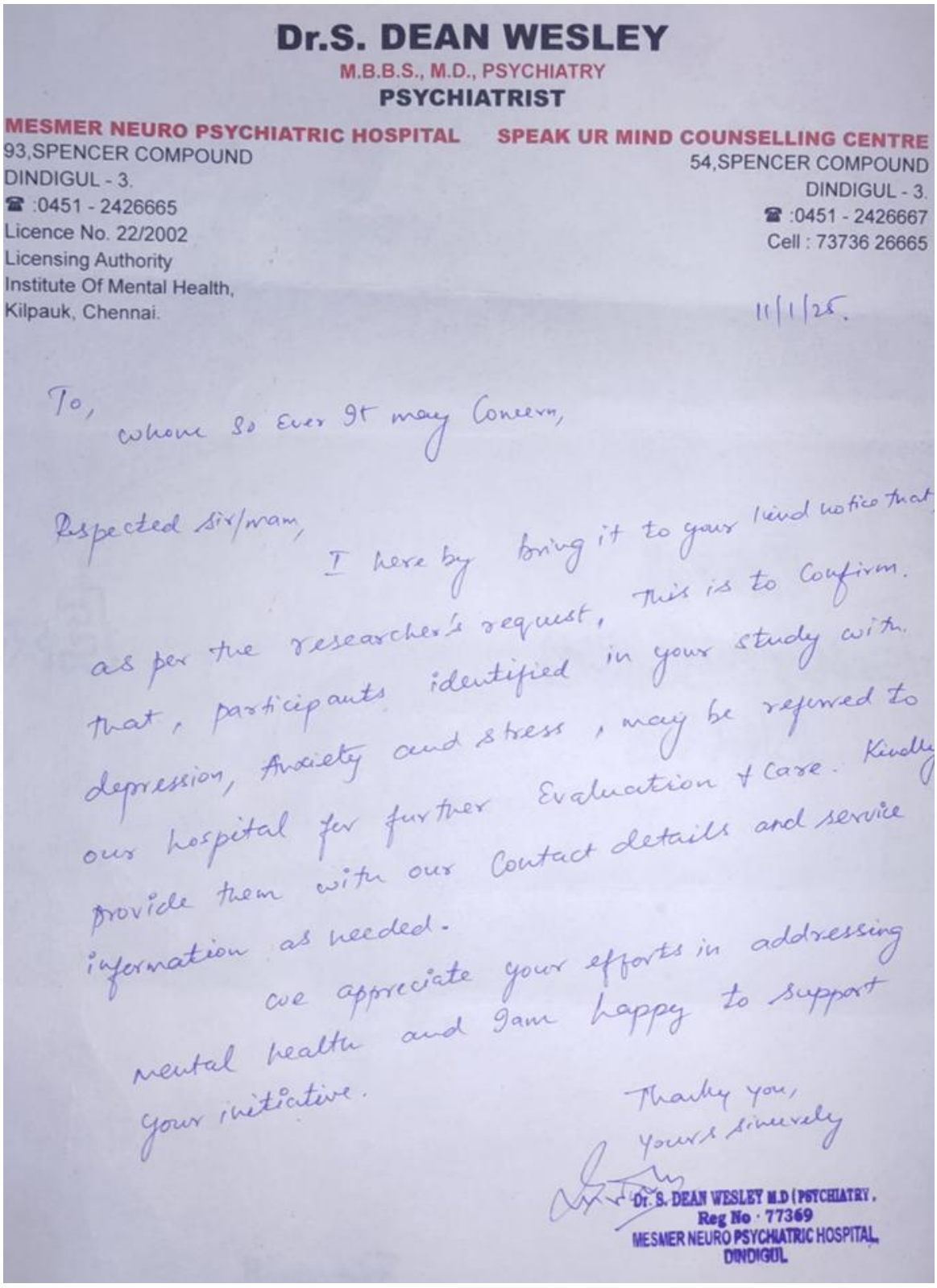
Nancy Krieger, PhD
Professor of Social Epidemiology
American Cancer Society Clinical Research Professor
Department of Social and Behavioral Sciences
Harvard T.H. Chan School of Public Health
677 Huntington Avenue, Kresge 717
Boston, MA 02115 (USA)
office: 617-432-1571; fax: 617-432-3123; email: nkrieger@hsph.harvard.edu
web page: http://www.hsph.harvard.edu/faculty/nancy-krieger/

Department of Social and Behavioral Sciences
677 Huntington Ave
Kresge Building
Boston, MA 02115
www.hsph.harvard.edu

TEL 617 432 1135
FAX 617 432 3123

ANNEXURE XII

Permission Letter to Refer an Individual Exhibiting a High Negative Emotional State



Dr.S. DEAN WESLEY
M.B.B.S., M.D., PSYCHIATRY
PSYCHIATRIST

MESMER NEURO PSYCHIATRIC HOSPITAL
93,SPENCER COMPOUND
DINDIGUL - 3.
☎ :0451 - 2426665
Licence No. 22/2002
Licensing Authority
Institute Of Mental Health,
Kilpauk, Chennai.

SPEAK UR MIND COUNSELLING CENTRE
54,SPENCER COMPOUND
DINDIGUL - 3.
☎ :0451 - 2426667
Cell : 73736 26665

11/1/25.

To,
whom So Ever It may Concern,

Respected Sir/mam,

I here by bring it to your kind notice that as per the researcher's request, this is to Confirm. that, participants identified in your study with depression, Anxiety and stress, may be referred to our hospital for further Evaluation & Care. Kindly provide them with our Contact details and service information as needed.

We appreciate your efforts in addressing mental health and I am happy to support your initiative.

Thanking you,
Yours Sincerely

Dr. S. DEAN WESLEY M.D (PSYCHIATRY.
Reg No · 77369
MESMER NEURO PSYCHIATRIC HOSPITAL
DINDIGUL

ANNEXURE XIII

Plagiarism Report

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Full thesis without reference_Vignesh

By: Vignesh

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21,261 words - 117 matches - 95 sources

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207 words / 1% - Crossref
Nancy Krieger, Kevin Smith, Deepa Naishadham, Cathy Hartman, Elizabeth M. Barbeau. "Experiences of discrimination: Validity and reliability of a self-report measure for population health research on racism and health", Social Science & Medicine, 2005
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openaccess.iyte.edu.tr
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Dong, X., R. Chen, and M. A. Simon. "Experience of Discrimination Among U.S. Chinese Older Adults", The Journals of Gerontology Series A Biological Sciences and Medical Sciences, 2014.
36 words / < 1% match - Internet from 17-Apr-2025 12:00AM