HEALTH SERVICE READINESS AND AVAILABILITY OF AYUSHMAN AROGYA MANDIR FACILITIES FOR NON- COMMUNICABLE DISEASES IN JAUNPUR DISTRICT, UTTAR PRADESH

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DECLARATION

I hereby declare that this dissertation titled **"Health service readiness and availability of Ayushman Arogya Mandir facilities for non-communicable diseases in Jaunpur district, Uttar Pradesh"** is the Bonafide record of my original research. It has not been submitted to any other university or institution for the award of any degree or diploma. Information derived from the published or unpublished work of others has been duly acknowledged in the text.

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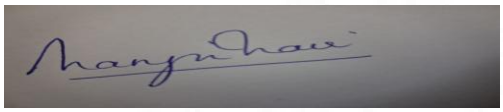
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CERTIFICATE

Certified that the dissertation titled **"Health service readiness and availability of Ayushman Arogya Mandir facilities for non-communicable diseases in Jaunpur district, Uttar Pradesh"** is a record of the research work undertaken by Dr. Neha Tiwari, in partial fulfilment of the requirements for the award of the degree of "Master of Public Health" under my guidance and supervision.



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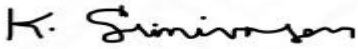
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GLOSSARY OF ABBREVIATIONS

WHO- World Health Organisation

LMICS- Lower Middle-Income countries

GDP- Gross domestic product

DALY- Disability- Adjusted Life Years

NFHS 5- National Family Health Survey -5

EAG- Empowered Action Group

COPD- Chronic Obstructive Pulmonary Disease

HWCs – Health and Wellness Centres

AB-PMJAY- Ayushman Bharat- Pradhan Mantri Jan Arogya Yojana

IPHS- Indian Public Health Standards

AB-HWC- Ayushman Bharat- Health and Wellness Centre

CPHC- Comprehensive Primary Health Care

NCD- Non -Communicable Disease

CHC- Community Health Centre

PHC – Primary Health Care

UPHC- Urban Primary Health Care

SHC - Sub Health Centres

AAMS- Ayushman Arogya Mandirs

CVD- cardiovascular diseases

CRDS- Chronic Respiratory Diseases

DM – Diabetes Mellitus

ICMR- Indian Council of Medical Research

OOPE – Out of Pocket Expenditure

CHE – Current Health Expenditure

NRHM – National Rural Health Mission

NP-NCD - National Programme for Prevention and Control of Non-Communicable Diseases

NHM – National Health Mission

ASHA- Accredited Social Health Activist

MPW- Multi – Purpose Worker

ANM – Auxiliary Nurse midwife

FSSAI - Food Safety and Standards Authority of India

HIS - Health Information System

SARA - Service Availability and Readiness Assessment

WHO-PEN - World Health Organization - Package of Essential Non-Communicable (NCD)

NIOPDSS - North India Outpatient Department Satisfaction Scale

ABSTRACT

Background: The Ayushman Bharat Health and Wellness Centre initiative, launched in 2017, was upgraded to Ayushman Arogya Mandirs (AAMs) by the Government of India in 2023 to provide broader and expanded health care services, including those for non-communicable diseases (NCDs). AAMs were designed to provide Community Health Officer (CHO) led preventive, promotive, and primary care, including screening, health promotion and treatment for common NCDs, with the goal of ensuring universal health coverage and reducing out-of-pocket expenditure. This study was carried out in Jaunpur district of Uttar Pradesh to assess the readiness and availability of AAMS for delivering NCD services and patient satisfaction with the NCD services they provide.

Methods: A cross-sectional study was conducted among 75 AAMs across rural Jaunpur using a structured facility checklist adapted from the Government of India guidelines. In addition, 300 exit interviews were conducted among patients aged 30 years and above using the North India OPD Satisfaction Scale (NIOPDSS). Descriptive statistics such as frequency, percentage, mean, standard deviation (SD), and range were used to summarize the data. The overall mean satisfaction score was also computed to assess general satisfaction across all domains.

Results: The results indicate that the readiness and availability of AAMs for NCD services varied widely across the domains. All the AAMs had a trained CHO and were functional during the time of the study. However, buildings were not in good condition in 50.7% of the AAMs, 24×7 water supply was available only in 41.3% only 13.3% had functional

toilets. While teleconsultation facilities were available in 82.7%, their use was restricted by the lack of electricity backup and internet connectivity.

Essential medicines like Metformin (100%) and Glimepiride (96%) were widely available, but insulin and other cardiovascular drugs were not available. NCD services for screening and referral for cancers were non-existent in the range of services provided. Patient satisfaction was generally high regarding provider behaviour and consultation time, but relatively lower for separate queue for women and elderly and other basic amenities

Conclusion: The study concludes that among the 75 Ayushman Arogya Mandirs in Jaunpur district, the mean readiness score was 49.59% in terms of facilities and resources available, indicating that the AAMs are only moderately ready and many are underprepared to manage conditions like hypertension and diabetes. More than half of the facilities had scores below this level and suggests variability in between facilities with some being more and others being less prepared.; highlighting the variability in preparedness across facilities.

The major deficiencies were related to lack of adequate space and facilities for patient care and other activities envisaged at the AAMs, inconsistent availability of drugs and reagents, lack of internet connectivity and electricity back up that renders many AAMs defunct in terms of patient care, data entry and tele-consultations.

Non availability of 24/7 water supply and toilet facilities affected the impede service quality and continuity of the AAMs and patient satisfaction. CHOs were universally present and trained, underscoring their role as the cornerstone of service delivery at AAMs. However, the irregular availability of ANMs, MPWs, and ASHAs undermines the multidisciplinary approach required for comprehensive NCD care.

However, overall patient satisfaction with AAMs was positive in terms of cleanliness, provider behaviour and communication, and pharmacy services consistent with previous

studies from similar contexts. Their satisfaction was poor with regard to the crowding and inadequate space, unavailability of drinking water, clean and usable toilets and lack of separate queues for women and elderly.

CHAPTER 1

INTRODUCTION AND REVIEW OF LITERATURE

1.1Background

In a report by WHO approximately 77% of deaths from non-communicable diseases (NCDs) occur in low- and middle-income countries (LMICs). In the LMICs with faster economic growth, the impact of NCDs like Diabetes and Cardiovascular diseases is projected to result in a reduction of 1 to 5% of their annual GDP. (Non -communicable diseases, 2024)

It has also been documented that these conditions disproportionately affect the poorer and marginalized sections of the population, and thereby widen the health inequities within and between countries. NCDs currently account for 63% of the deaths in the LMICs including India. As per the NCD report published by the Ministry of Health and Family Welfare, Government of India, Disease Adjusted Life Years (DALY) attributable to Non-Communicable Diseases (NCDs) has increased from 37.9% in 1990 to 61.8% in 2016. (Status of Non-Communicable Diseases (NCDs) in India, 2022)

The National Family Health Survey 5 (NFHS 5; 2019-21) reported that around 16 per cent of men and 44 per cent of women had sugar levels above 140 mg/dl or were on blood sugar control medications and 24 per cent of men and 21.3 percent of women have raised blood pressure or were on antihypertensive medication. (Tripathi et al., 2023). The statistics that one in four Indians are at risk of dying from an NCD before 70 years of age further illustrate the magnitude of the burden of NCDs in India. (Noncommunicable diseases: Mortality, 2023) There are eight states in India which have been identified as Empowered Action Group (EAG) that require focused interventions to address the health burden due to the

socioeconomic and geographic challenges that they face. Studies indicate that the prevalence of NCDs, among older adults were almost similar in the EAG states compared to the other states of India. (Prevalence of chronic diseases among older adults in EAG and non-EAG states of India and its contextual determinants - Abstract - Europe PMC, 2024)

Uttar Pradesh is one of the EAG states that lags behind in health and development indicators compared to the national and global standards. The leading causes of mortality in UP are also NCDs like cardiovascular diseases, chronic obstructive pulmonary disease (COPD) that coexist with lower respiratory infections, diarrhoeal diseases and neonatal conditions. (India_Health_of_the_Nation's_States_Report_2017.pdf)

NCDs are projected to cost the global economy over 13 trillion dollars by 2030. For instance, an increase in the NCD by 10% is expected to lead to a 0.5% decrease in global economic growth. (Elias et al., 2018a) Thus, it is a priority for all national governments to address the need for the population at risk of NCDS to be provided with long-term, preventive, promotive and sustainable community-based health care. The primary health care system is considered the best suited and is best positioned to identify individuals at high risk of NCDS. As NCDs become more prevalent, it has become unaffordable and unrealistic for any health care system to provide specialist care for all the detected cases. Therefore, a primary care approach that offers a cost-effective, egalitarian, and viable solution is touted as the best option to address the healthcare of people with.(Management of noncommunicable diseases, 2021)

In the backdrop of the growing health care needs due to the rising burden of NCDs, the continued burden of communicable diseases and the high out-of-pocket expenditure that excluded large sections from accessing health care, the Ayushman Bharat Yojana was rolled out by the Government of India in 2018 to ensure universals coverage. Its motive was to bring comprehensive and affordable preventive, promotive, curative, rehabilitative and

palliative care closer to the people and to ‘leave no one behind’. The two central components of the programme were the establishment of Health and Wellness Centres (HWCs) and the health assurance scheme, namely Ayushman Bharat Pradhan Mantri Jan Arogya Yojana (AB-PMJAY). The AB-PMJAY scheme ensures an annual health insurance coverage of Rs. 5 lakh to more than 10 crore poor families across the country(About PM-JAY - National Health Authority | GOI, 2021) These two essential components are positioned to work in concert between them to improve access, universal and equitable service delivery of health care across India. (03_PHC_IPHS_Guidelines-2022.pdf)

Under this programme, existing Sub Health Centres and Primary Health Centres were transformed into Health and Wellness Centres (HWCs) to ensure universal access to a wider spectrum of primary healthcare services.(Operational_Guidelines_For_CPHC.pdf) Around 1.5 lakh Health and Wellness Centres (HWCs) were established to provide universal, free comprehensive primary care services closer to people’s homes. HWCs were designed to provide basic diagnostic, screening and treatment services for NCDs in addition to the maternal and child health and communicable disease.

(aam.mohfw.gov.in/home/about us, 2021) There are 159,541 functioning Health and Wellness Centres (HWCs) in the country as of April 2023, 121,100 Sub Health Centres operational as HWCs and 23,524 Primary Health Centres (PHCs) as HWCs.(Bharat, 2023a)

To ensure that the HWCs attain a minimum acceptable level and aim for continual improvement, the Indian National Healthy Standards (IPHS) for the Health and Wellness Centres were published by the government in 2022. To make the Health & Wellness Centres people-centred, inclusive and sensitive to the health needs of the citizens, both their facility-based and outreach services are based on a community-based participatory approach.(SHC-HWC & UHWC IPHS 2022 Guidelines.) The key features of the HWCs are to ensure

continuity of care, health promotion and offer free essential treatment and diagnostic services with accountability.(Bharat, 2023b) Under the Comprehensive Primary Healthcare Services to be provided by HWCs

Figure 1 screening, prevention, and management of NCDs is one of the important packages.



HWCS are well-equipped to deliver certain NCD services as they are the population's first entry point to the country's health system. While extending universal health coverage, HWCs are expected to play a vital role in controlling NCD, by providing the complete spectrum of NCD services from screening, diagnosis and management to health promotion and behaviour change communication to reduce lifestyle-related risk factors.

Within three years of their launch in 2018, the Ayushman Bharat – Health and Wellness Centres (AB-HWCs) had screened over 13.06 crore people for hypertension and around 10.7 crore for Diabetes.(Bharat, 2023a) However, limited studies have assessed the services and facilities of the Health and Wellness Centres and have identified gaps that need

to be addressed to enable them to function to their fullest potential.(Panda, Panda, Behera, Panda, Munda, Sahu, et al., 2023; Tripathi et al., 2023)

As per the national mandate, Uttar Pradesh planned to upgrade around 90 per cent of its PHCS and 75 per cent of its subcentres, covering all the districts in the state, including the eight aspirational districts, to HWCS. The total number of AB-HWCs to be operationalized in the State of Uttar Pradesh till December 2022 is 19,424. As on 30th June, 2022, 13,832 AB-HWCs have been operationalised in Uttar Pradesh. (Centre, 2021)

A concurrent evaluation had identified challenges faced by the HWCs in terms of facilities and human resources the State to a small extent.(Sabha et al., 2022)

However, patient perception, the most important part of healthcare service delivery, is often neglected when assessing healthcare services. In emerging economies such as India, where large-scale changes in health service delivery are being attempted, the perceptions of healthcare workers as well as beneficiaries are critical Since it will serve to improve the delivery of services and make them more client-oriented.(PR Sodani et al., 2010)

In 2023, the Government of India proceeded to rename the Ayushman Bharat- Health and Wellness Centres to 'Ayushman Arogya Mandirs' (AAMs) with the tagline 'Arogyam Parmam Dhanam'. (REV_ 3_JUNE_1591 NQASA_Guidebook for HWC (Sub-centre)_03-11-2022.)

It is reported that around 1,73,881 AAMS are operational in the country and around 317 crore patient visits have been recorded as of July 2024. The services are provided under 12 packages of services, including services for NCDs. (Update on Ayushman Arogya Mandirs, 2024).This study is planned to assess the health service readiness and availability of Ayushman Arogya Mandirs (AAMs) for non-communicable diseases in Jaunpur district of Uttar Pradesh.

1.2 Review of literature

This section summarises the existing literature that highlights the burden of non-communicable diseases as a public health challenge globally and in India, the health care system in India and its role in the delivery of NCD care, and the critical components of service delivery assessment. Key concepts of availability and health system readiness are discussed along with the popular tools used to assess health system readiness, and finally, the findings from multiple studies that have assessed health service delivery for NCDs are presented. The review aimed to develop an understanding of the current state of NCD care in India, tools used to assess the availability of NCD care delivery and the readiness at the primary health care level to provide such care, and an understanding of the gaps and challenges identified.

Global: Non-communicable diseases have emerged as the most significant global public health challenge. Around forty million of the annual deaths in the world are caused by chronic non-communicable diseases, and around half of those deaths occur prematurely in the age group 30–70 years. (Noncommunicable diseases, 2023) Every year, 41 million people die from noncommunicable diseases (NCDs), accounting for 74 percent of all deaths globally, of which close to half die prematurely under the age of 70. Around 86 per cent of these early deaths happen in the low- and middle-income countries. Leading in the list of deaths are cardiovascular diseases (17.9 million), followed by cancers (9.3 million), chronic respiratory diseases (4.1 million) and Diabetes (2 million).(Noncommunicable diseases - Key facts 2023),(*NCD Alliance*, 2015)

Non-communicable diseases (NCDs), including cardiovascular diseases, cancers, diabetes and chronic respiratory diseases, share the core modifiable behavioural risk factors namely tobacco use, unhealthy diet, physical inactivity and alcohol use. They lead to obesity, hypertension, high blood sugar and hyperlipidaemia, which predispose to the NCDs, and

many of these risk factors of NCDs are preventable.(NP-NCD Operational Guidelines_0.pdf, 2023.)

India: According to the WHO – NCD India profile - 2018, the burden of non-communicable diseases (NCDs) is estimated to be 63% of the total deaths in the country – with cardiovascular diseases the leading cause of mortality causing 27% of the overall deaths, followed by chronic respiratory disease (11%), cancers (9%), diabetes (3%) and others (13%) (Figure 1)(Noncommunicable diseases country profiles 2018,)

As per the report "India: Health of the Nation's States"-(2017-India-State-Level-Disease-Burden-Initiative-Full-Report.pdf, 2018), it is projected that share of deaths due to Non-Communicable Diseases (NCDs) in India have increased from 37.9% in 1990 to 61.8% in 2016.

According to the India State-Level Disease Burden Initiative CVD Collaborators - 2016 data, there were 54.5 million cardiovascular disease cases, 23.8 million ischemic heart disease cases, 6.5 million stroke cases, 55 million COPD cases, 38 million asthma cases, and 65 million diabetes cases. (Abdul-Aziz et al., 2019; India State-Level Disease Burden Initiative CVD Collaborators, 2018; The burgeoning cardiovascular disease epidemic in Indians – perspectives on contextual factors and potential solutions - The Lancet Regional Health - Southeast Asia, 2023)

Figure 2 Mortality due to Non-Communicable disease India

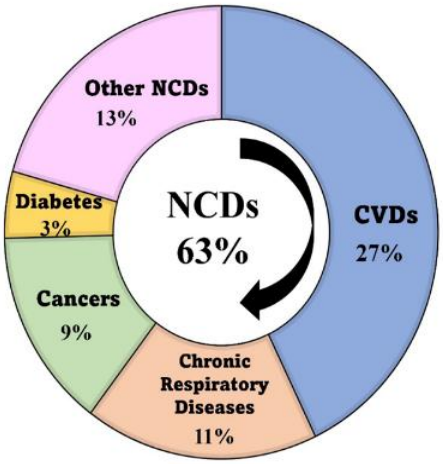


Figure 1: Mortality due to Non Communicable Diseases in India[1]

Cardiovascular diseases accounted for 28.1 per cent of the deaths, chronic respiratory diseases for 10.9 per cent of deaths, and cancers for 8.3 per cent of deaths in 2016. Four major NCDS (CVD, cancers, CRDS, and DM) contributed to 23% of total years of life lost in the age group 30-70 years.(Non communicable diseases, 2023)

Figure 3 Burden Of Non-Communicable Diseases in India

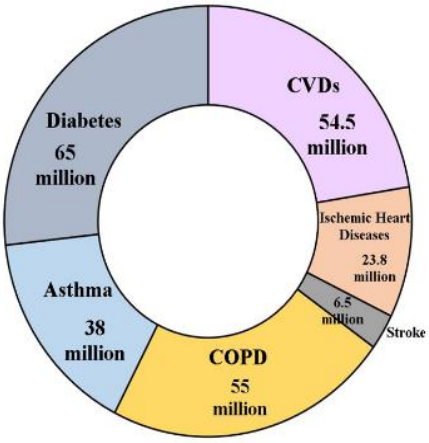


Figure 2: Burden of Non Communicable Diseases in India[7]

According to the National Cancer Registry Program (2020) report, the number of cancer cases in India is 13.92 lakhs. Among males, at most of the registries, lung cancer, mouth cancer, oesophageal cancer, and stomach cancer are the major sites. Breast cancer is the

most common cancer in females, followed by cervical cancer.(Report of National Cancer Registry Programme 2020)

A study (Behera and Pradhan, 2021) that analysed 56,731 household hospitalizations found that 21,776 patients were hospitalized due to NCDs and that 34,955 were from non-NCD conditions, including communicable diseases. NCD hospitalization was more common among households with elderly members (62%), among those located in rural [62%] and backward community (46%) social groups. Smaller households and those drinking unsafe water showed a higher incidence of hospitalization and health expenditure. Out-of-pocket expenditure (OOPE) for NCD averaged INR 35,512, with high Current Health Expenditure (CHE) reported by 72.09% of NCD households, particularly in the private sector. CHE was higher in rural, low-income families and those using unsafe water or firewood. These results highlight the financial impact that NCD-related hospitalizations have on Indian households, particularly those who belong to economically and socially disadvantaged sections of the population. This also emphasises the need for targeted interventions to increase access to affordable health care services for NCDs.

1.2.1 The health care system in India

India's health care system is a pluralistic mix of public and private providers, with a large emphasis on public health care in rural states through a three-tier system. This structure comprises:

1. Sub-centres (SCs): The primary contact point, an SC has a nurse and a health worker for maternal and child health, family welfare, immunization, and communicable disease control.

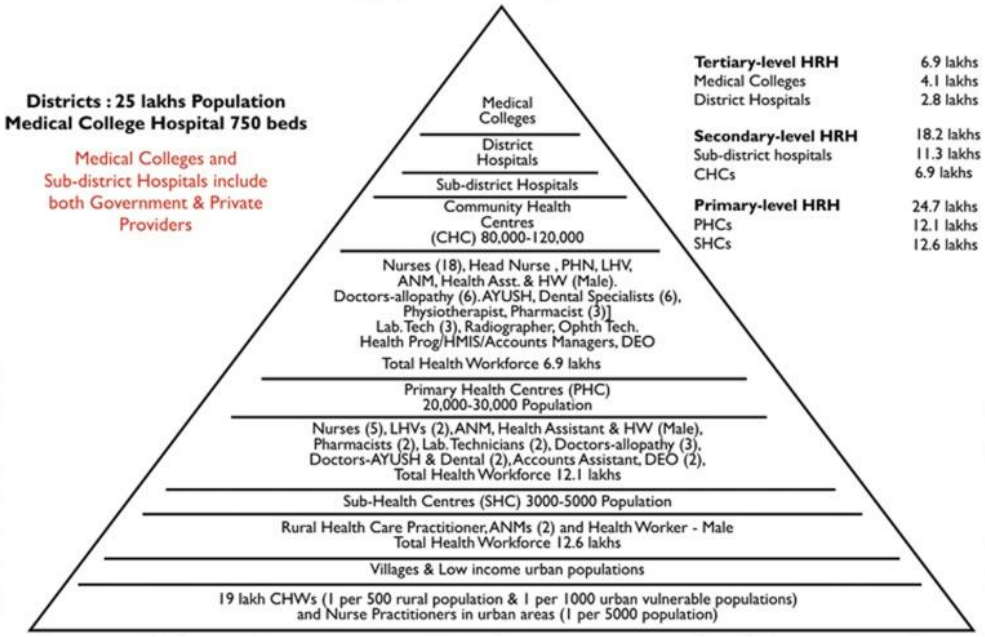
2. Primary Health Centres (PHCs): Primary Health Centres, covering larger population groups, provide preventive and curative care by medical officers and paramedical staff and serve as referral centres for several SCs.
3. Community Health Centres (CHCs) – These units serve as referrals from the PHCs and provide more specialized care with medical specialists and more advanced facilities including beds for inpatient care.

This system was strengthened further by the launch of India's National Rural Health Mission (NRHM) in 2005, which aimed to improve public healthcare access to underserved populations, especially in rural settings, through budgetary increases, infrastructure building and community involvement.(Chokshi et al., 2016)

1.2.2 Role of primary health care facilities

Primary healthcare constitutes the first interaction with medical services in India and provides access to both urban and rural communities. It includes maternal and child health care, control of common diseases, family planning, health education, and basic laboratory services provided at the clinics by health professionals such as doctors, nurses and such community health workers.(Primary Healthcare in India: A Comprehensive Guide with HealthAssure | HealthAssure, 2023)

Figure 4 Indian Public Health System. Reprinted with permission from National Rural Health Mission, Ministry of Health and Family Welfare, Government of India.



1.2.3 National initiatives for the prevention and control of non-communicable diseases

In 2010, the Government of India initiated the National Programme for Prevention and Control of Non-Communicable Diseases (NP-NCD) for the prevention and control of NCDs, including cancer, diabetes, cardiovascular diseases, and stroke. It focused on 100 districts to begin with and then the initiative was expanded to the entire nation during the 12th Five Year Plan. As part of the National Health Mission, NP-NCD intensifies NCD clinics at the district and block levels and consists of Cardiac Care and Day Care Centres. Thereafter, since 2016 Population-Based Screening & universal screening at Health and Wellness Centres have emerged as important strategies. Through the National Multisectoral Action Plan, the programme became supportive of coordinated efforts by including conditions COPD, asthma, and chronic kidney disease.(NP-NCD Operational Guidelines)

For the most part, health is a subject on the states' concurrent list, but the Union's Department of Health & Family Welfare extends support through the NPCDCS (National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases, and Stroke) launched in October 2010 under the National Health Mission (NHM). This is a program to help the states improve their infrastructure, human resources, and health promotion activities for the prevention, diagnosis, management, and treatment of NCDs.

In 2015, the Government of India launched the National Health Mission (NHM) to make structural changes in the healthcare delivery system to provide better access to quality healthcare for the underserved populations of rural India. NHM also aimed for the functional integration of Family Welfare and National Disease control Programs for the optimal use of resources and manpower and to strengthen outreach services through ASHA workers (Accredited Social Health Activists). The other initiatives were was mobilise community participation through Health and Sanitation Committees and increase in their involvement in the health programs, decentralize management at the district level by establishing Rogi Kalyan Samithies for hospital management, strengthen the public health infrastructure to meet the Indian Public Health Standards (IPHS) and strengthen the District Level Programme Management with professional staff. The National Urban Health Mission (NUHM) was launched as a Sub-mission under the National Health Mission, along with the National Rural Health Mission (NRHM), on May 1, 2013.(Operational Guidelines of NPCDCS (Revised - 2013-17)

The launch of Ayushman Bharat – Health and Wellness Centres (AB-HWCs) in 2018 was made to strengthen the delivery of universal health coverage to the rural and urban areas. The preventive aspects included wellness activities and community awareness through the Ayushman Bharat Health and Wellness Centres for NCDs and the promotion of physical activity through national health campaigns, the Fit India movement, and healthy eating

programmes initiated by FSSAI. Almost 677 NCD clinics, 187 cardiac care units, 266 day-care centres, and 5,392 CHC-level clinics across India have been set up for the purpose of NCD care. Ayushman Bharat centres offer screening for NCDs, particularly for persons above the age of 30, emphasising the early detection and management of diabetes, hypertension, breast and cervical cancer.(Ministry of Health & Family Welfare Initiatives & Achievements-2023, 2023)

The AB-HWCs were rebranded as Ayushman Arogya Mandirs (AAMs) with a fresh focus to deliver a comprehensive range of services. The mandate of Ayushman Arogya Mandirs is to deliver universal coverage, free and an expanded range of comprehensive primary health care close to the people. Their range of services was expanded much beyond Maternal and child health care services and included non-communicable disease care, including free essential drugs and diagnostic facilities. Screening, prevention, and treatment of NCDs have been introduced as a first step in the process of the inclusion of 12 other major health care packages.(Official Website Ayushman Arogya Mandir, 2021)

1.2.4 Components of health system function

Service delivery

Service delivery is one of the core health system functions, essentially a set of health interventions, their organization, and delivery. It has been defined as "the combination of inputs into a production process that occurs in a given organizational setting and leads to the delivery of a series of interventions" (Murray & Frenk 2000). Service delivery interacts with governance, financing, and resource generation, and service delivery influences and shapes intermediate objectives and broader health goals. (Nolte et al., 2022)

Key attributes of effective service delivery in health systems include:

Comprehensiveness: An extensive array of health services addressing preventive, curative, palliative, rehabilitative, and health promotion pursuits, suited to the specific requirements of the target demographic, is provided.

Accessibility: Services are continuously available and the availability of services is free from barriers related to cost, language, culture, or geographic location. Healthcare services are positioned as close to the population as possible, with primary care as the people's entry point, delivered at home, in the community, workplace, or health facility based on need.

Coverage: Services are designed so that all individuals in a defined population—including all income and social class groups and those that are healthy as well as sick—are given access.

Continuity: Designed to be continuous, care should aim to allow people to move smoothly across health services, conditions, levels of care and at different stages of life.

Quality: Health services are effective, safe and patient-centred, and delivered in a timely manner, according to the best standards of evidence.

Person-centeredness: Services are focused on the person rather than the disease or the payment structure, are perceived to be responsive and acceptable and account for patient involvement in the designing and assessing of services. Patients need to be partners in their care.

Coordination: Health networks are coordinated within local areas across providers, types of care, and across routine and emergency services. Primary care works through their patients directing them to the services they need, working across quality and across levels of care and sectors (e.g., to social services), with partners (e.g., community groups).

Accountability and efficiency: Health services are organized in a way that minimizes waste of resources while attaining the objectives. Managers are empowered and accountable for performance, with community and civil society participation in their assessments.(World Health Organization - 2010 - Monitoring the building blocks of health systems)

1.2.5 Health workforce

Health workforce is another key component of the health system functioning. The health workforce is "all people engaged in actions whose primary intent is to enhance health." This includes both clinical and other manpower like physiotherapists, physicians, nurses, pharmacists, and dentists, as well as public health workers like health officers, midwives, and community health workers. The workforce also includes essential management and support staff, who may not deliver care themselves but are key to the health system's functioning, including managers, ambulance drivers, and accountants.

A health worker shortage can result from insufficient trained professionals, an imbalance in the skills mix, and/or poor regional distribution. Other factors, such as retirement, career changes, or migration, also lead to a decrease in numbers. For the purpose of health care delivery for NCDs availability of basic health staff, training of staff for screening, diagnosis and treatment of NCDs is necessary.(AUNG et al., 2021)

1.2.6 Health information system

The health information system (HIS) is one of the main parts of health systems, and as such, It forms the basis of decision-making for all health systems' building blocks. Reliable, accurate information is required for the development and implementation of effective service delivery. Data about the NCDs patient, medicines and equipment, referral system,

reporting system, and feedback for reporting from higher levels of responsibility.(AUNG et al., 2021)

1.2.7 Access to essential medicines and equipment

A well-functioning health system ensures access to safe, effective, quality-assured medical products and vaccines, which are affordable. In the case of NCD service delivery, the availability of essential medicines and equipment for NCD screening, diagnosis, treatment, and health education is crucial (AUNG et al., 2021)

1.2.8 Healthcare financing

OOPE accounts for about 64% of the total healthcare expenditure in India, and this is incurred in the form of consultations, medicines, diagnostics and hospital fees and leads households into financial distress or poverty. The Pradhan Mantri Jan Arogya Yojana (PM-JAY), which provides a health assurance cover of Rs 5 lakhs per year to poor families to access secondary and tertiary care, is a means to ensure that the out-of-pocket expenditure is reduced. NCDs health service costs, funding mechanisms, and the community's cost-sharing, donation and involvement are crucial for a sustainable health delivery model(AUNG et al., 2021).

1.3 Service Readiness / Availability

Service readiness is defined as the availability of the essential indicators for NCD care at the PHCs, including functional equipment, diagnostic capacity, national guidelines for NCD management, and first-line essential medications(Hinneh et al., 2024).

Service availability: NCD service availability is defined as the availability of NCD services, including specialized service arrangements and the required staff to diagnose and manage NCD at district hospitals.(Hinneh et al., 2024).

Service availability assesses the presence of health facilities, health personnel and infrastructure, while service readiness evaluates the extent to which these health facilities are prepared to provide quality services through the availability of trained health workers, essential equipment for health service delivery, essential medicine and diagnostics.

1.3.1 Tools to measure service availability and readiness assessment

Service Availability and Readiness Assessment (SARA)

The WHO Service Availability and Readiness Assessment (SARA) is a standardised survey tool that has been used to measure service delivery. It measures two dimensions namely service availability and service readiness. SARA's core elements include those for general service readiness like basic amenities, equipment, availability of essential medicines and diagnostic facilities, service specific indicators (e.g. non communicable diseases) as well as surveillance, monitoring and evaluation.

1.3.2 Assessment of healthcare services for NCDs

Facility survey Tool: Modified Version of GOI HWC monitoring checklist

The Facility Survey Tool is a revised Government of India (GOI) Health and Wellness Centre (HWC) Monitoring Checklist and aims to evaluate the specific readiness and functional capacity of primary health centres (HWCs) in providing services in the non-communicable disease (NCD) space. This assessment makes an analysis of infrastructure, the availability of essential equipment and medicine, and the workforce capacity of NCD-specific interventions (screening, diagnosis and follow-up care). This provides for both a general service readiness and NCD relevant analysis of service readiness, know what the requirements are for service delivery and where the gaps are within health services.

1.3.3 Tool for service delivery: GOI HWC Reporting format and NCD Portal data

The Service Delivery Tool synthesized the GOI HWC Reporting Format data and relevant NCD Portal data to provide real-time insights into services provided at HWCs. It monitors key metrics including patient attendance, diagnostics coverage, availability of essential medicines, and quality of care provided for NCDs. It is a knowledge resource for and about-the-people and facilitates monitoring and evaluation of service delivery/with the efficiency of programme implementation slide in mind — all in compliance with the objectives of Ayushman Bharat, the flagship healthcare initiative of the Government of India.

1.3.4 Tools used in this study

For the purpose of this study, the above tools have been adapted for use. The choice of these tools is informed by their successful prior use in a study conducted in the Bhandara District of Maharashtra(Ambekar et al., 2021), in which they showed the feasibility to evaluate NCD service provision at HWCs. Their usefulness in assessing India's health care system in the context of a local setting provides an effective and applicable tool for the purpose. In addition, these tools have been tailored to align with national health policies in India, like the Ayushman Bharat campaign, and are ideally suited to assess operational readiness and service delivery in the Indian context.

1.3.5 Patient Exit Interview Tool (NIOPDSS)

The North India Outpatient Department Satisfaction Scale (NIOPDSS) is a 17-item scale incorporating six dimensions of patient satisfaction developed in Chandigarh, North India and was found to be a reliable and valid tool to measure patient satisfaction of patients attending outpatient departments in North India (Goel et al., 2014a) Though many studies have used non-generic PSQ 18 tool that is internationally recognised, it is not designed for the health care delivery model existent in India. The NIOPDSS provides a better assessment

of challenges specific to Indian contexts, such as inadequate infrastructure and accessibility of medications, and was found to help in a better assessment of patient satisfaction than the PSQ-18 in India. It covers essential domains such as structural access, building infrastructure, service effectiveness, provider interaction, community pharmacy services, and patient-centred care. It includes wait times, clarity of communication, provider empathy, access to medicines, and responsiveness to patient needs. Hence, NIOPDSS was used for the patient exit interview in this study.

1.3.6 Assessment of health services delivery for non-communicable diseases

International Studies

An assessment of capacity in Primary Care in Low-Resource Settings for Implementation of Essential Noncommunicable Disease Interventions indicated the responsiveness of primary care facilities across eight low- and middle-income countries to deliver NCD services. Significant challenges identified were insufficient financing, limited access to essential medicines and diagnostic technologies, shortage of trained health personnel and poorly functioning health information and referral systems. (Mendis et al., 2012).

A cross-sectional study that evaluated the readiness of public primary level health care facilities (Puskesmas) in Makassar, Indonesia to provide CVD services using a modified WHO Service Availability and Readiness Assessment (SARA) tool. The study found overall adequacy but important gaps in diagnostic capacity, core medicines and rehabilitation services. Basic infrastructure and treatment for hypertension and diabetes were generally available, but advanced diagnostic tests, medications like antiplatelets and statins, as well as long-term care for chronic diseases were limited. The study identified gaps in the current management of CVD in Indonesia, and some pathways to improve such

as enhancing supply chains, diagnostic tools and training for better primary care resources.(Arsyad et al., 2022)

Similarly, in Northern Vietnam, gaps in non-communicable disease (NCD) services were identified among Commune Health Centres (CHCS) where less than 25% of the CHCS provided preventive services for NCD risk factors, and less than half had essential NCD medications. The availability of services varied by location, with the Northern Mountainous area were the least prepared. The study identified gaps in infrastructure, availability of medications and financing and called for more integration and targeted resource allocation to accommodate the increasing burden of NCDs. (Duong, David B, 2015)

An assessment of 82 primary health care units (PHCUs) in Sidama, Ethiopia, explored their readiness to address hypertension (HTN) and type 2 diabetes mellitus (DM), according to the WHO SARA scoring tool. It was found that regional preparedness was inadequate, with only 29% and 28% of facilities prepared to deliver hypertension and diabetes services, respectively. It was found that urban facilities were more than eight times more likely to be ready compared with rural facilities. Significant gaps also included low availability of trained staff, diagnostic materials and essential medications like ACE inhibitors and metformin. Hospitals were preferable to health centres. The recommendations were for improving rural and lower-level facilities for readiness to provide care for NCDs with better training, guidelines, and supplies. (Mulugeta and Kassa, 2022).

In Kenya, a cross-sectional survey of 258 health facilities found that service readiness was comparatively better among urban and private facilities and high-level health facilities. Readiness for cervical cancer screening was highest (86%), and readiness for diabetes and CVD was lower, at 71% and 69%, respectively. Rural and lower-level facilities were less ready to offer CRD services, and readiness varied by region and facility type. (Ammoun et al., 2022).

A study conducted in Burkina Faso, to evaluate CVD and Diabetes healthcare facility preparedness and service availability from 2012 through 2018 found that availability of CVD services increased from 67.3% to 92.7%, and Diabetes services increased from 42.5% to 54%. It was also found that the mean readiness to manage diabetes readiness improved over time whereas the mean readiness to manage CVD management decreased from 2014 onwards. There were regional variations, as readiness for diabetes care and outcomes varied between geographic locations. (Cissé et al., 2023)

In a study of 117 primary health care facilities in Syangja District, Nepal, the researchers found that although 92.3% had electricity, only 34.3% had an uninterrupted supply and piped water was present in only 53% of facilities. Around three-fourths of the facilities had access to the internet and operated in purpose-designed buildings, but only 10.3 per cent had working ambulances. The survey found 69.2% of the facilities ensured privacy for patients,70.1% possessed flush toilets and 95.7% of facilities had management committees, which local governments often supported. In contrast, notable gaps in infrastructure and resources were identified in the overall capacity to provide NCD services; median readiness was low (50%), with only 6% of facilities achieving a minimum threshold. (Sharma et al., 2024) In Nepal, Public hospitals and PHCS had the highest readiness scores, and rural facilities performed better than urban ones. The presence of quality assurance systems and user fee charging was positively correlated with facility readiness scores. Still, essential medicines for diabetes, CVD, and Chronic Respiratory Diseases (CRD) remained low in all facilities. (Thapa et al., 2024)

In Srilanka, about 67.8% of the health facilities were publicly managed, and 53.5% were situated in urban area according to a survey of 258 health facility. CRD care was provided in 93.8% of facilities, Diabetes care was offered by 82.2%, and CVD services were available in 65.1%. Only 24.4% of the facilities offered cervical cancer screening. Service

readiness was in overall better among private and urban facilities, especially for diabetes and CRD. Facilities of higher levels also had better readiness, and urban facilities were more likely to provide CRD service than rural ones.(Nair et al., 2023).

National Studies

A qualitative Study explored the challenges to NCD care services among people living with NCDS in West Bengal, India found several barriers, including a lack of empathy from healthcare providers, stigma, financial strain and overcrowded facilities. Limited awareness around public insurance schemes, and inadequate healthcare infrastructure in underserved areas were also other issues identified, and the study recommended civil society involvement, improved home-based and rehabilitative care, and inclusive policymaking with input from those living with NCDS. (Biswas et al., 2022)

A study carried out in Manipur assessed readiness across PHCs, CHCs, district hospitals and tertiary care centres, using the WHO Package of Essential NCD Interventions (WHO-PEN) for assessment. Key challenges identified were human resource shortages, drug shortages, and a lack of laboratory services, especially at the PHC level. Both studies highlighted the importance of training health care workers and improving infrastructure. The survey done in Manipur focused on the gap in knowledge among doctors and revealed that 88% did not have sufficient understanding of NCD management. The readiness index was higher in the CHCs, district hospitals and tertiary care centres than in PHCs in Manipur.(Gupta, Gitanjali, Christina, L. Janani, et al., 2022).

Another study was carried out in Madhya Pradesh to assess the readiness to provide care for cardiovascular diseases among PHCs and CHCs using the WHO Package of Essential NCD Interventions (WHO-PEN) for assessment. The study showed critical gaps in key items required for management of NCDs at the primary care level. It found that there were

gaps in the availability of human resources, diagnostic services, equipment, drugs and supplies. They found that the PHCs had lower readiness when compared to the CHCs. (Pakhare et al., 2015a)

Each of these studies, which were conducted at varying points in the implementation of the NPCDCS program, highlight the need for systemic interventions to better prepare primary healthcare for NCDs in India.(Gupta, Gitanjali, Christina, L Janani, et al., 2022) &(Pakhare et al., 2015a)

A study conducted in Manimajra block, UT Chandigarh to assess the coverage of government health facilities for non-communicable disease (NCD) services using WHO SARA tool among ten health facilities. Although the overall readiness score was 57.75%, there were major gaps in diagnostic capacity (40%), life-saving drugs, and skilled staff are available. While diabetes (89%) and cardiovascular disease (77%) services were generally available, services for chronic respiratory disease (44%) and cervical cancer (25%) were less common. The challenges ranged from drug shortages, overworked and undertrained staff, to lack of means to transport, limited community awareness, and fragmented data systems. In order to improve NCD management through primary care, regular training, better infrastructure, data term management, and adequate resources were recommended. (International Journal of Noncommunicable Diseases, 2023)

A cross-sectional study titled "Readiness of primary health centres and community health centres for providing noncommunicable diseases-related services in Bengaluru, South India" assessed the preparedness of 36 PHCs and six CHCs in Bengaluru using standard methodology. Findings showed that there are substantial deficits in HR, essential medicines, diagnostics, and training. Most centres, had basic equipment and critical resources such as guidelines for NCD management, but advanced diagnostics were lacking. These challenges, such as limited laboratory capacity, lack of trained human resources and

irregular supplies of medicines, highlight the need for system strengthening for better delivery of NCD services. (Parameswaran and Agrawal, 2019a)

Assessment of Functioning of Health and Wellness Centres was carried out in Western Odisha identified several gaps in human resources and service delivery in the HWCs of Sambalpur and the Deogarh districts. Compared to rural HWCs, urban centres had better infrastructure and IT facilities, and teleconsultation was more prevalent in urban HWCs. Shortages in human resources and in the availability of drugs were reported. Recommendations were made to improve PHC infrastructure, human resources, and service package delivery. (Panda, Panda, Behera, Panda, Munda and Sahu, 2023)

Similarly, a study carried out in the urban health care facilities in Mysore, Karnataka, revealed poor health system preparedness with insufficient diagnostics and counselling services available. Public facilities lacked adequate resources, and private care was prohibitively expensive. It highlighted the need for tailored interventions across the continuum of care, including public-private partnerships, improved diagnostics and community education, and behaviour change to enable better NCD management in resource-limited settings. (Jayanna et al., 2019).

A cross-sectional study was conducted to assess the readiness of 65 primary health centres (PHCS) in Dakshina Kannada district, Karnataka, for noncommunicable disease (NCD) management using the WHO Package of Essential Noncommunicable Diseases (PEN) and Public Health Standards. It found several gaps in human resources, laboratory support and access to emergency drugs. Essential medicines for managing chronic NCDs were available, but critical diagnostics and supplies for emergency and secondary prevention of NCD were lacking. (Raj, k m, et al., 2021).

A study to understand the utilisation of noncommunicable disease (NCD)services through the public health facilities in Kasaragod district, Kerala, under the NPCDCS programme found that of the people diagnosed with NCDS, 56.0% used public health screening services and 40.7% used treatment services. Utilisation was influenced by insurance coverage, perceptions of service quality, access issues, and health providers' involvement. Recommendations of the study to improve service uptake were to strengthen the facilities, increase community awareness, and enhance health worker engagement. (Bhagyalakshmi and Kodali, 2019).

A review of the Ayushman Bharat programme as a means towards Universal Health Coverage opined that the programme has greatly enhanced availability and financial risk protection for disadvantaged communities, most notably with the PM-JAY scheme and a comprehensive chain of health and wellness centers. It was also discovered to have played a crucial role in the COVID-19 pandemic, providing financial relief and expanding telemedicine access. But the review identified some gaps, including underfunding of rural centres and shortages of health workers, a lack of emphasis on outpatient and preventive treatment, low levels of public awareness and others. (Grewal et al., 2023).

1.3.7 Patient Satisfaction Assessment Through Exit Interviews: Insights from Literature

Research highlights that patient satisfaction is an essential but often overlooked measure of healthcare system performance. Clinical and non-clinical variables influence patient satisfaction, such as the quality of services, infrastructure, availability of medicines, behaviour of staff, and adherence to patient preferences. Multiple factors determine stakeholder satisfaction such as the quality of care provided, hospital infrastructure, provider behaviour, psychological support, patient comfort and consideration of patient's choice. Under-deliverance of the stakeholders' expectations may lead to dissatisfaction and

understanding these perceptions is critical to discover areas for improvement and to take focused measures to increase the perceived service quality provided. (Jenkinson et al., 2002) & (Boyer et al., 2006). Patient satisfaction is also related to timely, person-centred care, and traditional aspects of care tuned to patient expectation improves satisfaction (McKinley, 2001).

A study done among 561 OPD patients in Madhya Pradesh using a structured questionnaire showed higher satisfaction among those who attended higher-level facilities than those at the lower level. However, those at the lower health facilities were more satisfied with the behaviour of staff including doctors. The study also reported that proximity to health facilities and lower expenses were the factors that influenced the use of public facilities. Regarding the facilities' seating arrangement, overall cleanliness and lighting, the district and civil hospitals were rated higher, but more than half of the respondents reported dirty toilets. Slightly more than ninety per cent rated the doctors' behaviour, 95% perceived that they were given adequate time, though longer wait times were observed at higher-level facilities as they had a heavier patient load. (P Sodani et al., 2010)

Patients with Diabetes and Hypertension reported a strong dependency on the private sector for care provision and medication in a mixed-methods study done at Tumkur, Karnataka. Even though the medicine was low-cost in the public healthcare system, only about 10% of patients availed medicines from government facilities due to frequent stockouts and non-availability of laboratory services, and 76% of patients got their medicines from private pharmacies due to perceptions of better availability and better quality. (Elias et al., 2018b).

Irregular stock availability of medicines, infrastructural deficiencies and frequent changes due to staff rotations in the public facilities led to the patient perception that the care in the private facilities is more efficient and sustained, despite it being more expensive and predisposing them to financial hardship. People's perception of the medicines available

through public facilities as being of poor quality and their irregular availability also leads to dissatisfaction. (Elias et al., 2018b). Another study in Kerala also reported that most patients (91.67%) reported that the quality of the NCD services provided in the public health sector was inadequate and therefore, they did not utilise them. (Bhagyalakshmi and Kodali, 2019).

However, a study in Madhya Pradesh indicated that the waiting time to see the doctor at the Primary Health Centres (PHCS) was much lower than higher-level facilities, and around 96 per cent of the patients rated that the PHCS provided timely services. More than eighty per cent of the patients rated the staff behaviour, and 86% perceived doctors' behaviour as good. Around 93% of patients agreed that the medical officers at the PHCS had spent adequate time with patients during consultations. (P Sodani et al., 2010)

A cross-sectional survey across sample of health facilities in Uttar Pradesh and assessed patient satisfaction in 5-point Likert scale, where 1 meant "completely disagree" and 5 as "completely agree". Mean general patient satisfaction score was 3.71 (±0.65) and overall perceived quality score was 3.63 (±0.65) [7]. Subjective scores ranged from 3.78 (±1.12) for medicine availability, 2.62 (±1.52) for medical information availability, and 3.39 (±0.75) for clinic infrastructure. Mean score for behaviour received the highest rating for doctor behaviour [4.22 (±0.92)] and staff behaviour [3.90 (±0.84)].(Rao et al., 2006)

A demographic and perceptual analysis of the patients visiting Urban PHCs (UPHC) in Lucknow and Prayagraj with a focus on quality of care and delivery efficacy found that among the patients included in the analysis, roughly 55.5% of the 1,753 patients waited less than 30 minutes for their treatment. However, the patients in Prayagraj faced longer wait times. More than 80 per cent found the waiting areas adequate. The overall PHC service satisfaction was 57%, with Prayagraj (62%) having better satisfaction than Lucknow (51%). The critical factors that increased satisfaction were the short wait time,

being examined by medical officers, availability of free medicines, easy access to the PHC, convenient operating hours, and adequate waiting area space.(Agarwal and Mishra, 2022).

This study provides important insights into diabetes and cancer care experiences and preferences among patients and caregivers in India, including the issues encountered within the healthcare system and avenues for improvement.(Nila et al., 2024).

A review of 95 studies (49 on diabetes care, 46 on cancer), mostly from southern India, showed that overcrowding, multiple visits for drug refills, delays to diagnosis and treatment, inadequate pain management, and subpar hospital environments led to patient dissatisfaction. Gaps in communication regarding diagnoses and treatment, and an empathy deficit, were also causes for dissatisfaction. The experience in the private sector was less hassle free than the public hospital system because of long queues, fragmented services and lack of regular supplies of drugs. Weaknesses in the health system were attributed to shortages of resources, providers and trained health workers, and lack of a feedback system, thus emphasizing the necessity for reforms to enhance patient satisfaction and access. The review also pointed out that there are limited qualitative studies for in-depth understanding, the underrepresentation of the vulnerable groups and the dearth of community-level studies related to patient satisfaction with public health care facilities. (Nila et al., 2024).

1.4 Rationale for the study

There are eight states in India which have been identified as Empowered Action Group (EAG) that require focused interventions to address the health burden due to the socioeconomic and geographic challenges that they face. Studies indicate that the prevalence of NCDs, among older adults were almost similar in the EAG states compared to the other states of India.(Prasad and Ghosh, 2024)

Uttar Pradesh is one of the EAG states that lags behind in health and development indicators compared to the national and global standards. The leading causes of mortality in UP are also NCDs like cardiovascular diseases, chronic obstructive pulmonary disease (COPD) that coexist with lower respiratory infections, diarrhoeal diseases and neonatal conditions.(India: Health of the Nation's States | Institute for Health Metrics and Evaluation, 2017).

According to (NFHS -5) data, Jaunpur district of Uttar Pradesh has a considerable burden of NCDs. Prevalence of high blood pressure affects 16% of women and 19.7% of men. In comparison, high blood sugar levels impact 8% of women and 9.6% of men, underscoring a pressing need for accessible hypertension and diabetes services. Additionally, only 4.2% of women have undergone cervical cancer screening, with minimal access to breast and oral cancer screenings. Substance use is also high in the district, with a prevalence of tobacco use at 43.8% among men and 5.8% among women, and reported alcohol use reported at 13.6% for men and 5.8% for women. Jaunpur is a largely rural and underserved district of Uttar Pradesh. There are about 320 Ayushman Arogya Mandirs have been operational in Jaunpur since 2018, a prime mandate of which is prevention, control and management of NCDs. The readiness and availability of the AAMs in Uttar Pradesh have not been assessed, indicating a research gap, and hence this study was envisaged.

1.4.1 Research questions

- What is the readiness and availability of resources in Ayushman Arogya Mandirs for delivering Non-Communicable Disease (NCD) services?
- What infrastructural, human resource, and service delivery gaps exist in Ayushman Arogya Mandirs concerning NCD care?
- What is the patient satisfaction with the Non-Communicable Disease (NCD) services provided at Ayushman Arogya Mandirs?

1.5 Objectives

- To assess the readiness and availability of Ayushman Arogya Mandirs for delivering Non-Communicable Disease (NCD) services.
- To assess the patient satisfaction with NCD services provided through the Ayushman Arogya Mandirs

CHAPTER 2

METHODOLOGY

2.1 Study design

A cross-sectional study to assess the readiness and availability of Ayushman Arogya Mandirs, for delivering Non-Communicable Disease (NCD) services in Jaunpur district, Uttar Pradesh.

2.2 Study setting

- Rural areas of Jaunpur district, Uttar Pradesh

2.3 Study participants

The study participants included currently employed Community Health Officers (CHOs) at Ayushman Arogya Mandir facilities who are aged 21 years and above, with a minimum of one year of experience at these centres.

For patient exit interviews, individuals aged 30 years and above, both male and female, attending Ayushman Arogya Mandir facilities on the day of data collection for Non-Communicable Disease (NCD) services were included.

2.4 Sample size

For health centres

According to (Brar et al., 2022), screening for diabetes was being performed at 50% of HWCs.

Using this proportion with a 95% confidence interval, 10% absolute precision of the 50% estimate, the sample size was calculated to be 75 Health and Wellness Centres (HWCs) that were upgraded as Ayushman Arogya Mandir facilities

Sampling strategy

Proportionate sampling was used to ensure representation from across the district. The district has 21 blocks. The number of Ayushman Arogya Mandirs from each block was calculated based on the individual block's proportion of the total number of Arogya Mandirs in the district. The required 75 Arogya Mandirs were proportionally selected so that the final sample reflected each block's share of the number of AAMs in the district. Once the required number of Arogya Mandirs was calculated for each block, specific Arogya Mandirs were selected based on simple random sampling, ensuring that each Arogya Mandir within the block had an equal chance of selection.

For patient exit interviews

A purposive sampling technique was used to recruit the study participants to measure patient satisfaction with NCD services. Study participants for patient satisfaction include four patients from each Ayushman Arogya Mandir.

Four patients from each Ayushman Arogya Mandir were purposively selected for the exit interviews. Only adults above the age of 30 years and seeking care for non-communicable diseases will be selected for the exit interviews.

2.5 Participant selection

Inclusion criteria:

Community Health Officers (CHOs):

- CHOs who were currently employed at Ayushman Arogya Mandir facilities
- With at least one year of experience working as a CHO at an Ayushman Arogya Mandir

Patients:

- Patients aged 30 years and above (male or female}
- Attending Ayushman Arogya Mandir facilities on the day of data collection for Non-Communicable Disease (NCD) services and
- Those who consent to participate

Exclusion criteria:

- Patients visiting the Ayushman Arogya Mandir facility on the day of data collection, seeking care for conditions other than non-communicable diseases.
- Patients who are unable to provide informed consent due to cognitive or language barriers.

2.6 Data collection process

- A structured interview schedule was used to collect data from the study participants. The duration of the study was from January to February 2025. The interview was conducted in both English and Hindi. CHOs were provided with an informed consent form, and their voluntary participation was ensured. CHOs were interviewed using standardized questionnaires and observational checklists, with surveys administered in person to ensure completeness and accuracy.
- The Facility survey Tool used in the study was a Modified Version of GOI HWC (Health and wellness centre) monitoring checklist and Service delivery Tool, which had earlier been used by Ambekar et al., in their study on Health and Wellness Centres in Bhandara District, Maharashtra.
- Patients attending the OPD for Non-Communicable Disease (NCD) services were approached after their consultation. The purpose of the exit interview was explained, and informed consent was obtained in Hindi before participation. A

structured interview was conducted in Hindi, using the North India Outpatient Department Satisfaction Scale (NIOPDSS) to assess patient satisfaction. (Goel et al., 2014b).

2.7 Data Collection Tool

- The Facility Checklist for Non-Communicable Diseases (NCDs) used in this study was developed and implemented in a similar survey conducted in Bhandara district, Maharashtra by Ambekar et al. (2021). Permission to use and adapt this tool was obtained from the original author, ensuring a standardized and comprehensive approach to assessing the readiness of Ayushman Arogya Mandirs (Sub Health Centres) in Jaunpur District, Uttar Pradesh. This checklist serves as a validated tool for evaluating infrastructure, service availability, equipment, and human resources necessary for NCD service delivery and The North India Outpatient Department Satisfaction Scale (NIOPDSS) is a reliable and valid tool for measuring patient satisfaction with OPD services at health facilities in North India. The approach used to develop the questionnaire was based on an extensive literature review, followed by expert Delphi consultations.
- The checklist consisted of five key sections:

Section1: Survey Details

District Name, Block Name, Visited Ayushman Arogya Mandir (AAM), Unique ID of AAM, Total Villages covered by AAM, Total Population covered by AAM, Distance to Nearest Referral Center

Section 2: Physical Infrastructure

Building Readiness: Repairs, upgrades, and cleanliness, Facilities: Reception, registration, power backup, 24/7 water, drinking water, and functional toilets, Display and Awareness:

AAM logo, local language signage, health illustrations, Space and Resources: Wellness room, tele-consultation room, complaint/suggestion box., Waste Management: Bio-medical waste disposal system and drainage.

Section 3: Human Resources

Availability of Key Staff: CHO, MPW, ANM (regular and contractual), and ASHAs, Training and Plans: AAM orientation, job descriptions, and activity plans.

Section 4: Equipment and Consumables

Clinical Tools: Basic medical tools (e.g., stethoscopes, BP apparatus, thermometers), Consumables: Syringes, gloves, waste bins (color-coded for bio-waste), Furniture: Chairs, tables, storage, examination tables, Lab Diagnostics: Glucometers, reagents, urine test strips, IT Resources: Tablets, laptops, internet, tele-consultation setup.

Section 4.6 - 4.8: Medicines, Diagnostics, Health Promotion

Essential Medicines: Hypertension, cardiovascular, antidiabetic drugs, Diagnostics: Blood glucose, urine dipstick tests, Health Promotion: Yoga sessions, health day celebrations, IEC displays, and directional signage to AAM.

Section 5: NCD Service Delivery

Screening Services Provided: Diabetes, Hypertension, Oral Cancer, Breast Cancer, Cervical Cancer,Suspected Cases & Referrals for Diagnosis,Referrals for Confirmation: Individuals suspected and referred for Diabetes, Hypertension, Oral and Breast Cancer, and Cervical Cancer, New Diagnoses and Treatment Initiation,Newly Diagnosed Cases on Treatment: Diabetes, Hypertension, Diabetes & Hypertension, Oral, Breast, and Cervical Cancer, Follow-Up and Higher Center Referrals,Follow-Up for Ongoing Care: Includes both new and old cases for all conditions, Referrals to Higher Centers: Patients referred to higher centers as needed for advanced care.

The North India Outpatient Department Satisfaction Scale (NIOPDSS) that evaluated patient satisfaction, had the following sections

Section 1: Sociodemographic details

Age, sex, Religion, Caste, Level of education, socio-economic status, Marital status, Type of house, Ownership.

Section 2: Six dimensions

Location of the health facility, administration, the waiting area, physician, pharmacy and basic facilities.

2.8 Variables used in the study

2.8.1 Dependent variables

1. Availability and readiness of AAM (Sub Health Centre)

2. Patient satisfaction score

Facility checklist:

Descriptive statistics

Continuous Variables: (e.g., average number of villages covered, population covered, distance to the nearest referral centre) were presented using Mean ± Range and Median with Interquartile Range (IQR) to provide insights into central tendency and dispersion.

Categorical Data: All variables with binary responses (e.g., Yes/No) were summarized using **frequencies** (number of occurrences) and **percentages**.

Equipment Functionality was assessed by calculating the percentage of functional equipment relative to total availability.

2.8.2 Assessment of Facility Readiness

To assess the overall readiness of each Ayushman Arogya Mandir (AAM) facility, a composite readiness score was calculated. Each facility was assessed against a predefined checklist of binary (Yes = 1, No = 0) indicators related to infrastructure, human resources, equipment, drugs, consumables, and services.

For each facility, the readiness percentage was computed using the following formula:

Readiness & availability % = (Number of Yes response) / (total numbers of items in checklist) * 100

Service Delivery and its Coverage

Each variable represents a quantitative measure of service delivery at Ayushman Arogya Mandirs (AAMs) and is assessed through simple counts and descriptive statistics (Mean ± SD).

Screening: Count of individuals screened for each condition (Variables: Hypertension, Diabetes, Oral Cancer, Breast Cancer, Cervical Cancer) at each facility.

Assessment Approach

Higher values in the screening variables indicate better outreach and health promotion efforts.

Large standard deviations suggest variability in screening performance across facilities.

Suspected and Referred Cases: (Variables: Hypertension, Diabetes, Oral Cancer, Breast Cancer, Cervical Cancer) at each facility.

Count of individuals suspected of having a condition and referred for further evaluation.

Assessment Approach

Higher values suggest active screening and referral mechanisms.

Zero or very low values indicate poor case detection or lack of referrals.

New Diagnoses: (Variables: Hypertension, Diabetes, Oral Cancer, Breast Cancer, Cervical Cancer) at each facility).

Count of individuals confirmed with a new diagnosis (based on diagnostic tests following suspicion).

Assessment Approach

Helps measure the effectiveness of screening in detecting actual cases.

If screening is high but diagnoses are low, it may indicate poor follow-up testing.

Cases on Treatment: (Variables: Hypertension, Diabetes, Oral Cancer, Breast Cancer, Cervical Cancer) at each facility).

Count of diagnosed individuals who were initiated on treatment at AAMs.

Assessment Approach

If diagnosed cases are high but treatment cases are low, it may indicate poor service linkage or lack of treatment availability.

Cases on Follow-Up: (Variables: Hypertension, Diabetes, Oral Cancer, Breast Cancer, Cervical Cancer) at each facility).

Count of patients returning for follow-up care (for treatment monitoring and continuity).

Higher values suggest good patient retention and chronic disease management.

Zero cases for cancer suggest a lack of structured follow-up mechanisms.

Percentage Calculation for Service Delivery Metrics

The methodology is detailed below:

1. Screening Coverage (%)

For each condition—**diabetes, hypertension, oral cancer, breast cancer, and cervical cancer**—screening coverage was calculated as:

Screening % = No. of individuals screened / Target population aged 30+ * 100

2. Suspected and Referral Rate (%)

To assess the effectiveness of early case detection and referral:

Suspected and Referral% = No. of individuals suspected & referred / No. of individuals screened * 100

This percentage reflects the proportion of screened individuals identified as potentially having an NCD and referred for further evaluation.

3. New Diagnosis Rate (%)

New Diagnosis% = No. of individuals newly diagnosed / No. of individuals suspected & referred * 100

This indicator measures the ability of the facility to confirm diagnoses following suspicion.

4. Treatment and Follow-Up Cases

Due to the inclusion of both newly diagnosed and previously diagnosed (old) patients in the treatment and follow-up records, it was not feasible to compute a meaningful percentage using a specific denominator. Hence, the absolute number of patients on treatment and follow-up was reported for each condition across the 75 facilities. These values reflect the service utilization and chronic disease management efforts at the AAMs.

2.8.3 Patient satisfaction score assessment

Descriptive statistics

Sociodemographic variables

1. Age – Age in completed years as reported by the participant, for analysis this was categorised as: <= mean age, > mean age

2. Sex- Male/ Female as reported by the participant.

3. Religion – religion followed as reported by the participants

4.Caste category- caste category to which they belong as reported by the participants.

5. Marital status: Married/ Unmarried/ Widowed as reported by the participants

6.Socio economic status: APL/BPL as reported by the participants

7.Ownership of the house – whether the house of residence is owned by the participant or anyone else in the household- own house/ rented

8.Education – For the purpose of analysis, the education status of respondents was categorized into three groups based on the highest level of formal education attained:

1. **No Formal or Less than Primary Education** – This category included individuals who had either never attended formal schooling or had not completed primary education.
2. **Primary and Secondary Schooling** – This group comprised respondents who had completed
3. **High Schooling and Above** – These included individuals who had completed high school, diploma, graduate, or postgraduate education.

2.8.4 OPD services satisfactory questionnaire

Patient satisfaction was assessed using the North India Outpatient Department Satisfaction Scale (NIOPDSS), a validated tool developed by Goel et al. (2014) specifically for the Indian healthcare context. The NIOPDSS measures patient satisfaction across six key dimensions: Accessibility and location of the health facility, waiting area and administrative processes, Physician interaction and consultation quality, Pharmacy services and availability of medicines, Basic amenities, including water and sanitation, Overall cleanliness and maintenance of the facility. The scale consists of 17 items, each rated on a 5-point Likert scale ranging from Strongly Agree (1) to Strongly Disagree (5), with an additional option for No Opinion (9).

A total of 300 patients visiting the Ayushman Arogya Mandir OPD services were interviewed using a structured questionnaire based on this scale. The questionnaire was administered through face-to-face interviews conducted by PI after obtaining verbal consent.

2.8.5 Scoring and Analysis:

Responses were coded numerically, and mean scores were calculated for each item and domain. Lower mean scores indicate higher satisfaction (i.e., stronger agreement with positive statements), while higher mean scores reflect dissatisfaction. Descriptive statistics such as frequency, percentage, mean, standard deviation (SD), and range were used to summarize the data. The overall mean satisfaction score was also computed to assess general satisfaction across all domains. Data analysis was done by using IBM SPSS Version 25.

2.8.6 Data storage

The P.I. has kept hard copies of the interview schedules and signed consent forms in a secure place. A unique respondent identification number was assigned to each facility to maintain confidentiality and privacy. These identification numbers are only known to principal investigator and research guide.

Under no circumstances were any personal details of any participant shared. All data collected, besides personal identifiers, were used solely for analysis. The data will be stored for five years, from the time of collection, and then destroyed permanently.

2.9 Ethical consideration

The Institutional Ethics Committee of Sree Chitra Thirunal Institute for Medical Sciences and Technology, Thiruvananthapuram, Kerala had reviewed the study and gave clearance to conduct the study (SCT/IEC/2335/DECEMBER/2024). Written informed consent was obtained from all the study participants before administering the interview schedule. The participants had the freedom to refuse

participation at the outset or during any stage of the study. There was no anticipated risk for participants by participating in the study.

CHAPTER 3

RESULTS

This chapter presents the results of the analysis related to two main objectives, which were as follows:

- To assess the readiness and availability of Ayushman Arogya Mandirs (AAMs), for delivering Non-Communicable Disease (NCD) services in Jaunpur District, Uttar Pradesh.
- To assess the patient satisfaction with NCD services provided through the Ayushman Arogya Mandirs

Readiness and Availability of Ayushman Arogya Mandirs (AAMs): The respondents for the facility readiness and availability of services were Community Health Officers of AAMs who were operational on the day of the researcher's visit. As per the study design, when a selected AAM was closed or was non-operational, the next closest AAM in the same block was selected to reach the intended sample size of 75 AAMs.

During the period of the study, five AAMs were temporarily non-operational at the time of the researcher's visit, since the CHOs posted to those AAMs were on maternity leave.

Patient satisfaction with NCD services provided through the Ayushman Arogya Mandirs

The results are organised in three key sections reflecting the readiness of Ayushman Arogya Mandir facilities for NCD service provision. These include:

Section 1: a) Physical Infrastructure, b) Human Resources, c) Availability and functionality of clinical equipment.

Section 2: a) Lab diagnostic Materials & Reagents, b) Drugs & Medicines, c) IT Equipment.

Section 3: a) Consumables & Hygiene supplies, b) furniture & fixtures, c) Records and Health promotions.

3.1 Descriptive analysis:

Section 1: a) Physical Infrastructure

Table 1 Table 3.1.1 Physical Infrastructure (Basic facility)

SI no	Variable	Frequency N=75	Percentage (%)
1	Contact details of the nearest referral institution available	73	97.3
2	Arrangement for Biomedical Waste Management present	71	94.7
3	Good general cleanliness in the facility	69	92.0
4	AAM functioning from a Govt building	63	84.0
5	Adequate drainage system present	47	62.7
6	AAM building has electricity with functional power back up	42	56.0
7	AAM building in good condition	38	50.7
8	AAM building has a drinking water facility available at AAM	32	42.7
9	AAM building has 24/7 running water supply	31	41.3

N=75

More than ninety percent of the AAMS were generally clean, as assessed by the researcher, and had facilities for biomedical waste management. Most AAMs operated in government buildings (84 percent). However, only half of the AAM buildings were in good condition. Only around half (56 percent) had functional electricity backup, and less than half had access to safe drinking water (42.7percent) and a 24/7 water supply (41.3percent). Drainage facility was adequate in only 62.7percent of sites. Contact details of referral facilities were available in almost all the facilities.

Table 2 Table 3.1.2 Physical Infrastructure (Premises)

Sl no.	Variable	Frequency (N=75)	Percentage (%)
1	Room for teleconsultation facility (laptop, internet, zoom installed) available	62	82.7
2	AAM has a wellness room for Yoga sessions	40	53.3
3	Repairs and upgrades of AAM completed	22	29.3
4	Adequate space as per the services available and workload available	21	28.0
5	AAM with a functional and clean toilet available (separate for Male and Female)	10	13.3
6	AAM with MPW (F) Quarter available in its premise	6	8.0
7	Patient reception and registration centre available	4	5.3
8	MPW (F) residing at AAM	2	2.7

N=75

More than eighty percent of Ayushman Arogya Mandirs (AAMs) had space and facilities for tele-consultation, whereas wellness rooms for yoga were available only in just over half of them (53.3percent).

Less than one-third of the AAMs (28percent) had adequate space to meet the patient load and service needs, and had completed repairs or upgrades (29.3percent).

Toilet availability was very poor, and only 13.3percent had functional and separate toilets for males and females. A designated patient reception and registration area was present in a mere 5.3percent of the AAMs.

Less than 10 percent of the AAMs had a residential facility for the female multipurpose worker, and only around 3 percent of the female MPWs were residing in the AAM premises.

Table 3 Table 3.1.3 Physical Infrastructure (Visual communication, Community engagement)

Sl no	Variable	Frequency (N=75)	Percentage (%)

1	Citizen Charter and relevant IEC material for community awareness on services displayed at AAM	62	82.7
2	AAM logo and name ‘Ayushman Bharat in the local language displayed at AAM Building	51	68.0
3	Six illustrations displayed at the AAM building (Maternal health, Immunisation, Yoga, Tele consultation, Drug distribution, Health awareness)	50	66.7
4	Complaint /suggestion box available at AAM	11	14.7

N=75

IEC materials and citizen charter were exhibited in more than eighty percent of the facilities ensuring the visibility of services available at AAM to the community. Around two-thirds of the facilities had the Ayushman Bharat logo and name displayed in the local language (68percent) and had displayed illustrated posters on core services such as maternal health, immunization, yoga, and drug distribution. However, mechanisms for community feedback were limited since only 14.7percent of the AAMs had a suggestion box for feedback.

Section 1 b) Human Resources:

Table 4 Table 3.1.4 Human Resources (Availability and Readiness of Key Staff Categories)

Sl no	Variables	Availability (%)	AAM Training completed N=75(%)	Present on day of visit N=75(%)
1	CHO (Community Health Officer*	100.0	100.0	100.0
2	ANM (Regular)	64.0	64.0	29.3
3	ANM(Contractual)	25.3	25.3	9.3
4	MPW (Female)	9.3	8.0	5.3

The respondents for the facility readiness and availability of services were Community Health Officers of AAMs who were operational on the day of the researcher's visit. During

the visit, five AAMs were temporarily non-operational since the CHOs were on maternity leave. To achieve the intended sample size, the next closet AAM in the same block was selected to reach the final sample size of 75 AAMs.

However, the picture was less consistent for support staff. Regular ANMs were available in 64percent of facilities. While a quarter of facilities had contractual ANMs, female multipurpose workers were present in only 5.3 percent of facilities.

Table 5 Table 3.1.5: Work Planning and Role Clarity

Variable	Job Chart Available (%)	Weekly/Monthly Plan Available (%)
CHO (Community Health Officer)	98.7	98.7
ANM (Regular)	58.7	57.3
ANM(Contractual)	21.3	21.3
Multipurpose worker (MPW)	6.7	5.3

Almost all CHOs (98.7percent) had job charts and weekly/monthly plans, indicating good role clarity and planning. Among the ANMs present at the AAMs, only 58.7% of regular ANMs and 21.3% of contractual ANMs had their work plans. MPWs seemed to have the least planning, with only around 7% of them having their weekly plans displayed at the centre. This highlights a clear gap in the availability and adequacy of work instructions and indicates a gap in monitoring the work and the service delivery of the grassroots workers.

Table 6 Table 3.1.6 ASHA workforce status

Variable	Mean ±SD
No. of ASHA's under each AAM visited	6.11 ± 2.39
No. of ASHA's trained in AAM functions per AAM visited	5.63 ± 2.34
No. of ASHA's present on day of visit/AAM visited	1.21 ± 1.62
No. of ASHA's Job charts/Job description / AAM visited	1.96 ± 2.54
No. of ASHA’s with Visit plans/ AAM visited	2.21±2.38

On average, each Ayushman Arogya Mandir (AAM) had about 6 ASHAs (6.11 ± 2.39) to cover its population, with the majority of them having received training related to AAM functions (5.63 ± 2.34). On average, only one ASHA (1.21 ± 1.62) was present on the day of the facility visit, maybe due to the fact that their work is mostly field work in the area under the AAM. Furthermore, documentation and structured work planning were limited: job charts were available for just about two ASHAs (1.96 ± 2.54), and visit plans existed for slightly over two (2.21 ± 2.38). These findings reflect a gap between training coverage and operational implementation, highlighting the need for stronger supervision and scheduling mechanisms to optimize ASHA participation in the service delivery of AAM.

Section 1: C) Availability and functionality of clinical equipment

Table 7 Table 3.1.7 Core Equipment's for NCD Screening and Management

Sl no	Variables	Frequency(N)	Percentage (%)	Functional	Percentage (%)
1	Stethoscope	75	100.0	75	100.0
2	Weighing scale	68	90.7	67	89.3
3	BP apparatus (digital)	59	78.7	58	77.3
4	Measuring tape	42	56.0	42	56.0
5	Flashlight/torch	35	46.7	35	46.7
6	Sphygmomanometer	32	42.7	32	42.7
7	Stadiometer	8	10.7	8	10.7
8	Tongue depressor	5	6.7	5	6.7
9	Examination lamp	5	6.7	3	4.0
10	Mouth mirror	4	5.3	4	5.3

N=75

All AAMs had functional stethoscopes (100percent), and slightly more than three-quarters had a functional digital BP apparatus (77.3percent), and close to ninety percent had weighing scales, which is a positive finding in terms of readiness for basic NCD screening. However, the lack of a functional BP apparatus in a quarter of the AAMs requires attention.

Traditional sphygmomanometers were less available (42.7percent), but digital alternative compensates for this gap. They are also not preferred due to concerns of mercury pollution.

However, the availability of equipment like measuring tapes (56.0percent), flashlights (46.7percent), and stadiometers (10.7percent) was low and could affect NCD services.

Table 8 Table 3.1.8 Instruments for Specialized/Occasional Use

Sl.no	Variables	Frequency(N)	Percentage (%)	Functional	Percentage (%)
1	Digital thermometer	73	97.3	70	93.3
2	Cusco's/Graves Speculum	5	6.7	5	6.7
3	Sim's retractor/depressor	5`	6.7	3	4.0
4	Sim’s speculum	6	8.0	5	6.7

A few gynaecological instruments were also assessed to understand the broader service readiness at AAMs for routine and other NCD services like screening for Cervical cancers. Almost all facilities had digital thermometers (93.3percent functional). However, instruments like Cusco’s/Graves' speculums (6.7percent), Sim’s retractors (4.0percent), and Sim’s speculums (6.7percent) were rare, suggesting limited readiness of AAMs for cervical cancer screening and other basic gynaecological examinations.

Section 2: a) Lab diagnostic Materials & Reagents

Table 9 Table 3.1.9 Diabetes and NCD Screening Supplies

Sl no	Variables	Frequency(N)	Percentage (%)
1	Glucometer	73	97.3
2	Glucometer Testing Strips	63	84.0
3	Dipsticks for urine test for protein and sugar (1 container of 25 strips)	51	68.0
4	Acetic acid solution	0	0.0

N=75

Most Ayushman Arogya Mandirs (AAMs) were equipped with basic screening tools for NCDs. Glucometers were available in 97.3percent of facilities, with testing strips present

in 84.0percent, indicating a fair readiness for blood sugar monitoring. Urine dipsticks for protein and sugar were available in above two-thirds of the AAMs. However, Acetic acid solution required for certain basic screening procedures like Visual Inspection with Acetic acid (VIA) was not available in any of the AAMs, reflecting a potential gap in areas like screening for cervical cancers.

Very few Ayushman Arogya Mandirs (AAMs) reported the availability of general laboratory reagents. Only one facility (1.3percent) had Benedict's solution, bleaching powder, hypochlorite solution, spirit, and just two facilities (2.7percent) had N/10 hydrochloric acid. The shortage of such essential consumables would deleteriously affect the overall hygiene and infection control measures and availability of common diagnostic tests like urine sugar and haemoglobin in the AAMs.

b) Drugs & Medicines

Table 10 Table 3.1.10 Essential Drugs and Medicines for Non-Communicable Diseases

Sl no	Variables	Frequency(N)	Percentage (%)
1	Metformin	75	100.0
2	Glimepiride	72	96.0
3	Amlodipine	63	84.0
4	Atenolol	54	72.0
5	Furosemide	45	60.0
6	Isosorbide dinitrate	14	18.7
7	Clopidogrel	13	17.3
8	Hydrochlorothiazide	8	10.7
9	Enalapril	5	6.7
10	Insulin	0	0.0

N=75

The availability of first-line medications for managing non-communicable diseases was generally good across Ayushman Arogya Mandirs. Metformin was universally available (100.0percent), followed closely by Glimepiride (96.0percent) and Amlodipine (84.0percent). However, the availability of other drugs that are critical for the management

of NCDS (72.0percent), Furosemide (60.0percent), Isosorbide dinitrate (18.7percent), Clopidogrel (17.3percent), and Enalapril (6.7percent) was low. Insulin, a critical requirement for treating Diabetes Mellitus, was not available in any of the AAMs. All the medicines assessed are listed as essential medicines list for AAMs.

Table 11) Table 3.1.11 Tele-consultation and IT facilities

Sl no	Variables	Frequency(n)	Percentage (%)	Functional (n)	Percentage (%)
1	Tele-consultation	75	100.0	75	100.0
2	Daily entry	75	100.0	75	100.0
3	CPHC-NCD E Kavach application	75	100.0	75	100.0
4	Desktops/laptops	75	100.0	75	100.0
5	Tablets for CHO, MPWs available	20	26.7	15	20.0
6	Internet connectivity	0	0.0	0	0.0

N=75

There was 100 percent availability and functionality of desktops/laptops, tele-consultation facilities, and the CPHC-NCD application (E-Kavach), there was a complete absence of internet connectivity that would enable these services. Though physically present, the digital tools and platforms are unusable for real-time data entry, reporting, or telehealth services, indicating the waste of a considerable investment to improve services. While the ECHO (Extension for Community Healthcare Outcomes) spokes model was reportedly established across Ayushman Arogya Mandirs, the lack of internet connectivity nullifies such initiatives. It also renders remote consultations and real-time data exchange entirely nonfunctional.

Section 3: a) Consumables & Hygiene supplies

Table 12 Table 3.1.12 Infection Control and Bio-medical Waste Management Materials

Sl no.	Variables	Frequency(N)	Percentage (%)

1	Disposable gloves	75	100.0
2	Syringe	71	94.7
3	Wastebin (Red)	50	66.7
4	Wastebin (Yellow)	49	65.3
5	Wastebin (Blue)	49	65.3
6	Wastebin (Black)	17	22.7
7	Hand Towels	46	61.3
8	Cleaning material/Detergent	32	42.7
9	Black disposable bags	21	28.0
10	Yellow disposable bags	20	26.7
11	Red disposable bags	18	24.0
12	Blue disposable bags	11	14.7

N=75

Basic consumables and items required for proper biomedical waste management showed varying levels of availability across AAMs. While disposable gloves (100 percent) and syringes (94.7 percent) were almost universally present, indicating good support for basic procedures, waste segregation practices appeared inconsistent. Color-coded wastebins were available in around two-thirds of the AAMs - red (66.7 percent), yellow, and blue (65.3 percent each). However, disposable color-coded bags for transport had low availability with red (24.0 percent), yellow (26.7 percent), and blue (14.7 percent). This could indicate either poor segregation of waste or improper disposal of segregated waste, and a gap in adherence to proper biomedical waste protocols. Items required for hygiene and cleaning purposes, like hand towels (61.3 percent) and cleaning materials (42.7 percent), were not uniformly available across the AAMs and need to be improved to better infection control and hygiene practices.

Basic Facility Maintenance and Emergency Equipment

To support the general functioning of the facility and emergency preparedness, several basic maintenance items and emergency equipment were assessed. Fire extinguishers were available in 10.7% of the facilities. Buckets both small and large were found in 57.3 percent

and 60.0 percent of the facilities respectively, while examination bedsheets were available in 50.7 percent of the centres.

In addition to materials directly related to NCD care, certain patient care support items were also evaluated as part of overall facility readiness. Foley's catheter (adult) was available in 9.3 percent of the Ayushman Arogya Mandirs, disposable sterile urethral catheters in 4.0 percent, and insecticide-treated nets in 6.7 percent of the facilities. Mucus extractors, however, were not available in any of the centres (0.0 percent). Although these items are not directly linked to NCD service provision, they contribute significantly to comprehensive patient care and emergency preparedness.

b) Furniture & Fixtures

Table 13 Table 3.1.13 Essential Furniture and Fixtures for Service Provision

Sl. no	Variables	Frequency(N)	Percentage (%)
1	Stool for attendants	73	97.3
2	Office Table	71	94.7
3	Chairs for patient area	70	93.3
4	Office chair	69	92.0
5	Steel Almirah/ Cupboard/storage chests	65	86.7
6	Foot step	47	62.7
7	Screen separator with stand	31	41.3

Basic furniture was largely in place across most AAMs. Over 90 percent of facilities had stools for attendants (97.3 percent), office tables (94.7 percent), chairs for patients (93.3 percent), and office chairs (92.0 percent). Storage solutions like steel almirahs or cupboards were available in 86.7 percent of facilities. However, the availability of certain accessory items like footsteps (62.7 percent) and screen separators for privacy (41.3 percent) for patients were relatively low. This highlights the need to stress on patient satisfaction by

providing them with privacy, confidentiality and comfort in the AAMs when they seek health care.

c) Signage and Records of Health promotion

Table 14 Table 3.1.14 Signage and Records of Health Promotion Activities

Sl no	Variables	Frequency(N)	Percentage (%)
1	Records of Health Day celebrations	75	100.0
2	Records of yoga sessions	64	85.3
3	Approach roads had directional signage to AAM	10	13.3
4	Timings of AAM were displayed	9	12.0

Records related to community engagement activities for health promotion were present in most AAMs, which were 100 percent related to health day celebrations and more than 80 percent related to yoga sessions. However, visibility and accessibility aspects were weaker—only 13.3percent had directional signage on approach roads and a mere 12.0 percent displayed facility timings, indicating the need for transparent and clear communication to the public to enhance their experience and increase community reach.

Table:3.1.15 Distribution of Readiness Scores of AAMs

Readiness score (%) category	Frequency No. of AAMs	Proportion of AAMs (%)	Mean $\pm$ SD	Median	Range Min- Max
90-99.99	1	1.3%	49.59	48.24	29.82- 91.23
70-79.99	4	5.3%			
60-69.99	6	8.0%			
50-59.99	23	30.7%			
Under 50	41	54.7%			

N=75

Out of 75 facilities assessed, the majority (54.7 percent) had a readiness score under 50 percent, indicating low readiness and availability. About 30.7 percent of the facilities scored between 50-59.99 percent, while 8.0 percent scored between 60-69.99 percent. Only 5.3

percent of the facilities had scores between 70-79.99 percent, and just 1.3 percent achieved a readiness score between 90-99.99 percent.

The overall mean readiness score was 49.59 percent with a median score of 48.24 percent, suggesting that half of the facilities had scores below 48.24 percent. The scores ranged from a minimum of 29.82 percent to a maximum of 91.23 percent, reflecting a wide disparity in readiness levels among the facilities.

Section 3.2: Service Delivery (Table 3.2.1)

Table 15 Table 3.2.1 Population Coverage by AAMs

Variable	Mean ± SD	Range (Min – Max)
Total population under the AAM	8007.57 ± 2076.46	2352-13776
Target population under the AAM for NCD care	3163.92 ± 1129.02	595-6933
Target population Male	1654.49 ± 578.51,	314-3422
Target population: Female	1453 ± 583.76	281-3660

N =75

Seventy-five Ayushman Arogya Mandirs were assessed to understand the coverage and delivery of Non-Communicable Disease (NCD) services. On average, the total population covered by each sub-centre was 8007.57 ± 2076.46, ranging from 3,255 to 14,679.

The average target population (individuals aged 30 and above) for NCD services under the AAMs was 3163.92 ± 1129.02. The average male target population was 1654.49 ± 578.52, and the average female target population was 1509.43 ± 583.77.

Table 16 Table 3.2.2 NCD Service Coverage (Mean number of individuals ± SD)

Category*	Diabetes	Hypertension	Oral Cancer	Breast Cancer	Cervical Cancer	Diabetes & Hypertension
Screened	2173.5 ± 975.0	2153.3 ± 930.6	733.1± 958.3	134.9±260.5	62.5± 206.4	-

Suspected & referred	124.2 ± 135.6	118.8 ± 128.7	2.6 ± 16.4	0.19 ± 1.1	0.33± 2.66	68.9 ± 129.6
New Diagnosis	41. ± 52.1	40.5± 59.7	0.1 ± 0.5	0.00	0.13 ± 1.2	20.4 ± 45.1
Cases on Treatment	35.0 ± 31.0	34.7 ± 34.7	0.03 ± 0.2	0.00	0.00	16.9 ± 22.9
Cases on Follow-up	33.3 ± 26.3	32.0 ± 29.6	0.01 ± 0.1	0.00	0.00	16.1± 21.1

The average number of individuals suspected and referred to higher facilities was 124.1 (± 135.62) for diabetes and 118.84 (± 128.76) for hypertension. For cancers, the referrals were considerably lower, with 2.57 (± 16.43) for oral cancer, 0.19 (± 1.05) for breast cancer, and 0.33 (± 2.66) for cervical cancer. Out of all the facilities, only 40 centres conducted oral cancer screening, and the median values for cancer screenings were zero in many cases, indicating minimal or no service coverage at several centres; moreover, the high standard deviations observed especially for cancer screening indicators reflect a wide variation in service availability across facilities.

The average number of new diagnoses was 41.97 (± 52.12) for diabetes and 40.51 (± 59.75) for hypertension. The high standard deviations in the average number of people screened indicate high variability among the AAMs

In terms of management, the mean number of cases on treatment was 35.01 (± 31.03) for diabetes and 34.77 (± 34.77) for hypertension. Cases on follow-up showed similar trends, with 33.31 (± 26.35) for diabetes and 32.03 (± 29.68) for hypertension. For oral, breast, and cervical cancer, the average number of cases on treatment and follow-up was almost negligible. For individuals diagnosed with both diabetes and hypertension, the mean number on treatment was 16.97 (± 22.85), and those on follow-up were 16.03 (± 21.07),

while the mean number of suspected and referred individuals in this group was 68.95 (± 129.63).

Figure 5 "Status of Screening, Diagnosis, and Management of Non-Communicable Diseases"

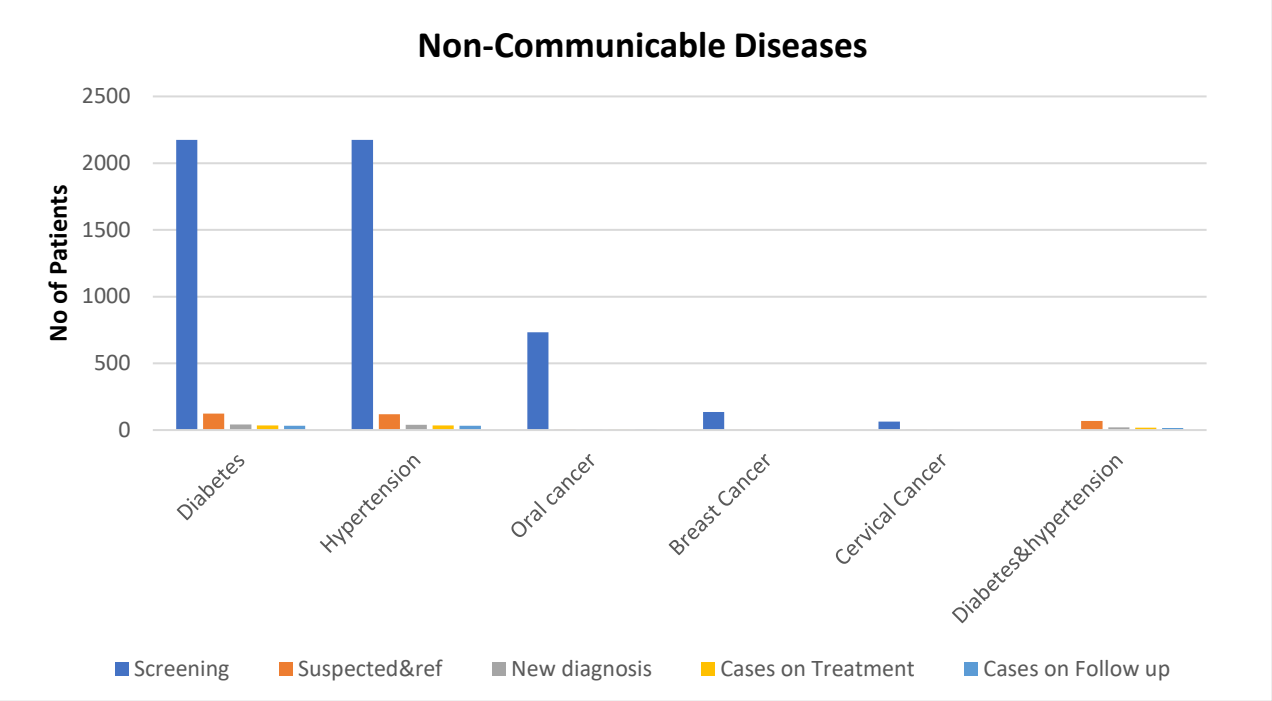


Table 17 Table 3.2.3 Services for Diabetes care among males and females

Variable Numbers	Males Mean± SD	Females Mean± SD
Screened	1149 .97 ±505.39	1023.53 ±490.75
Suspected & referred	67.81±77.32	56.35±62.16
New Diagnosis	22.16±27.26	19.81±25.51
Cases on Treatment	17.80±15.66	17.21±16.30
Cases on Follow-up	17.23±13.51	16.08±13.98

N-75

An analysis of the diabetes service coverage among males in the 75 Ayushman Arogya Mandirs (AAMs) showed that on average, 1149.97 (± 505.39) males were screened per facility, with 67.81 (± 77.32) suspected and referred cases, and 22.16 (± 27.26) newly diagnosed. Of these, 17.80 (± 15.66) were initiated on treatment, and 17.23 (± 13.51) were on regular follow-up. The data among females indicates that across the 75 Ayushman

Arogya Mandirs, on average, 1023.53 (± 490.75) women were screened per facility, and of those screened, approximately 56.35 (± 62.17) were suspected and referred for further evaluation. Newly diagnosed cases among females averaged 19.81 (± 25.52) per facility, suggesting that screening efforts successfully identify undiagnosed cases. On average, 17.21 (± 16.30) of these women were started on treatment, and 16.08 (± 13.98) continued on follow-up, reflecting a relatively smooth transition from detection to long-term care.

The finding reflects high variability between the AAMs and indicates that while some AAMs may be screening significantly more people, others may be screening considerably fewer people.

In addition, the figures indicate that of the people who were screened and referred for treatment, very few return to the AAMs for treatment or follow-up.

Table 18 Table 3.2.4 Services for hypertension among males and females

Variable	Males Mean± SD	Females Mean± SD
Screened	1141.61 ±480.30	1011.72 ±476.17
Suspected & referred	61.96±61.455	56.88±69.53
New Diagnosis	20.87±30.74	19.64±29.63
Cases on Treatment	18.44±17.605	16.33±18.116
Cases on Follow-up	17.01±15.29	15.01±15.24

On average, 1141.61 (± 480.30) males were screened per facility and 1011.72 (± 476.17) among females. Similarly, the number of suspected and referred cases was 61.96 ± 61.46 in males and 56.88 ± 69.53 among females

Section 3. 4 Patient satisfaction with NCD Services of AAM

Section: 3 a) Patient Socio demographic Information

b) Patient satisfaction services provided by AAM with NIOPDS scale

Based on the range of total satisfaction scores, responses were classified into five levels of satisfaction: 'Strongly Agree,' 'Agree,' 'Neutral,' 'Disagree,' and 'Strongly Disagree.'

In this section, the sociodemographic characteristics and patient satisfaction score of the participants are presented. All 300 patients who were selected for the study responded completely, ensuring a 100% response rate.

Sociodemographic characteristics

Table 19 Table 3.4.1 Sociodemographic characteristics of the participants (N=300)

Variable	Frequency (N)	Percentage (%)
Age		
Mean ± SD: 55.82 ± 11.92		
≤ 35 years	18	6.00
36 to 45 years	52	17.3
46 to 55 years	79	26.3
56 to 65 years	83	27.67
> 65 years	68	22.67
Sex		
Male	124	41.3
Female	176	58.7
Religion		
Hindu	270	90.0
Muslim	30	10.0
Caste		
General	87	29.00
OBC	131	43.67
SC	82	27.33
Education		
No Formal / Less than Primary Education	176	58.67%
Primary and Secondary Schooling	108	36.0%
High Schooling and Above	16	5.30%
Socioeconomic status		

APL	82	27.3
BPL	218	72.7
Marital status		
Married	269	89.7
Widowed	31	10.3
Type of house		
Kuccha	67	22.33
Semi Pucca	141	47.00
Pucca	92	30.67

The mean age of the participants was 55.82 years (±11.92), with the majority falling in the 56–65 years (27.67 percent) and 46–55 years (26.3 percent) age groups. Females comprised a greater proportion of the sample (58.7 percent) compared to males (41.3 percent). Most participants were Hindu (90 percent) and belonged predominantly to the OBC (43.67 percent) and General (29 percent) categories.

Educational attainment was low, with nearly 59 percent of participants having no formal education or less than primary-level schooling. Only 5.3 percent had completed high school or above. A significant majority (72.7 percent) were from households below the poverty line (BPL). Most respondents were married (89.7 percent) and resided in either semi-pucca (47 percent) or pucca (30.67 percent) houses, with 22.33 percent living in kuccha houses.

b) Patient satisfaction with the services provided by AAM using the NIOPDS scale

This study assessed patient satisfaction with outpatient department (OPD) services using the North India Outpatient Department Satisfaction Scale (NIOPDSS). This scale was specifically developed to evaluate patient experiences in the Indian healthcare setting, ensuring its relevance to local healthcare facilities.(Goel et al., 2014b)

The NIOPDSS measures patient satisfaction across six key dimensions: Accessibility and location of the health facility, waiting area and administrative processes, Physician interaction and consultation quality, Pharmacy services and availability of medicines, Basic amenities, including water and sanitation, Overall cleanliness and maintenance of the

facility. The scale consists of 17 items, each rated on a 5-point Likert scale ranging from Strongly Agree (1) to Strongly Disagree (5), with an additional option for No Opinion (9).

The participants were asked about their satisfaction with various parameters of healthcare services, including facility location, administration, physician interactions, pharmacy services, and basic amenities.

Table 20 Table 3.5.1 Responses regarding various parameters of NIOPDSS among the patients

Variable	Response category	Frequency(N=300)	Percentage (%)	Mean score (Mean ±SD)
Accessibility	Strongly agree	146	48.7%	
	Agree	142	47.3%	
	Neutral	2	0.7%	
	Disagree	9	3.0%	
	Strongly disagree	1	0.3%	1.59± 0.69
Location Convenience	Strongly agree	124	41.3%	
	Agree	163	54.3%	
	Neutral	1	0.3%	
	Disagree	11	3.7%	
	Strongly disagree	1	0.3%	1.67±0.69
Queue at the Centre	Strongly agree	0	0.0%	
	Agree	2	0.7%	
	Neutral	5	1.7%	
	Disagree	293	97.7%	
	Strongly disagree	0	0.0%	2.03±0.21
Separate queues For ladies/elderly	Strongly agree	0	0.0%	
	Agree	4	1.3%	
	Neutral	8	2.7%	
	Disagree	235	78.3%	
	Strongly disagree	53	17.7%	4.12±0.49

The mean scores related to accessibility and convenient location were below 2, indicating that the patients generally agreed or strongly agreed that they were accessible and well-located, or in other words, were satisfied with the parameters mentioned. However, they

had poor satisfaction with the queue at the AAMs and with the fact that there were no separate queues for women or the elderly.

Table 21 Table 3.5.2 Responses regarding various parameters of NIOPDSS among the patients

Less waiting time for consultation	Strongly agree	89	29.7%	
	Agree	208	69.3%	
	Neutral	2	0.7%	
	Disagree	1	0.3%	
	Strongly disagree	0	0.0%	1.76±0.49
Adequate space	Strongly agree	5	1.7%	
	Agree	80	26.7%	
	Neutral	4	1.3%	
	Disagree	204	68.0%	
	Strongly disagree	7	2.3%	3.43±0.96
Fans and light Working	Strongly agree	60	20%	
	Agree	203	67.7%	
	Neutral	16	5.3%	
	Disagree	16	5.3%	
	Strongly disagree	5	1.7%	2.01±0.48

The mean score for less waiting time for consultation was 1.76 ± 0.49; it was 2.01± 0.48 regarding the working of fans and light, indicating that the patients were generally satisfied. However, 70.3 percent disagreed about having enough space (Mean: 3.43 ± 0.96) and indicated low satisfaction.

Table 22 Table 3.5.3 Responses regarding CHO* related parameters of NIOPDSS among the patients

Adequate time for Explanations	Strongly agree	104	34.7%	
	Agree	192	64.7%	
	Neutral	1	0.3%	
	Disagree	3	1.0%	
	Strongly disagree	0	0.0%	1.68±0.54

Friendly and courteous	Strongly agree	92	30.7%	
	Agree	206	68.7%	
	Neutral	1	0.3%	
	Disagree	1	0.3%	
	Strongly disagree	0	0.0%	1.70±0.48
Clear advice was given regarding Dosage of Medicine	Strongly agree	115	38.3%	
	Agree	184	68.3%	
	Neutral	1	0.3%	
	Disagree	0	0.0%	
	Strongly disagree	0	0.0%	1.62±0.49
Was listened to Carefully	Strongly agree	134	44.7%	
	Agree	166	55.3%	
	Neutral	0	0.0%	
	Disagree	0	0.0%	
	Strongly disagree	0	0.0%	1.55±0.49

*Community Health Officer/ Treating Health Provider

The table above indicates that the mean scores of all the parameters related to the Community Health Officers (treating health providers) were below 2, indicating that the majority had a positive perception or were satisfied regarding the services provided. They were about adequate time being given to explain, being friendly and courteous, giving clear advice regarding medications, and being listened to.

Table 23 Table 3.5.4 Responses regarding pharmacy related parameters of NIOPDSS among the patients

Medicines Availability	Strongly agree	15	5.0%	
	Agree	250	83.3%	
	Neutral	20	6.7%	
	Disagree	15	5.0%	
	Strongly disagree	0	0.0%	2.12±0.55
Pharmacist Explained about Medicines	Strongly agree	36	12.0%	
	Agree	262	87.0%	
	Neutral	2	0.7%	
	Disagree	0	0.0%	
	Strongly disagree	0	0.0%	1.89±0.34
Took little time	Strongly agree	47	15.7%	

to dispense medicines	Agree	250	83.3%	
	Neutral	3	1.0%	
	Disagree	0	0.0%	
	Strongly disagree	0	0.0%	1.85±0.39

While the majority of the patients were positive about how the pharmacist explained about the medicines clearly and took little time to dispense medicines (Mean score 1.89 & 1.85 respectively). Regarding medicine availability, about 88.3 percent agreed/strongly agreed about medicines being available, with a mean score of 2.12, which indicates that the patients had a positive perception regarding it.

Table 24 Table 3.5.5 Responses regarding amenities related parameters of NIOPDSS among the patients

Drinking water Available	Strongly agree	0	0.0%	
	Agree	20	6.7%	
	Neutral	4	1.3%	
	Disagree	225	75.0%	
	Strongly disagree	51	17.0%	4.02±0.68
Toilets clean and Usable	Strongly agree	0	0.0%	
	Agree	57	19.0%	
	Neutral	8	2.7%	
	Disagree	63	21.0%	
	Strongly disagree	172	57.3%	4.17±1.16
Overall Cleanliness	Strongly agree	165	55.0%	
	Agree	130	43.3	
	Neutral	2	0.7%	
	Disagree	3	1.0%	
	Strongly disagree	0	0.0%	1.48±0.57

The respondents were, in general, satisfied with the overall cleanliness at the AMM, while they had negative perceptions or were dissatisfied regarding the unavailability of drinking water and the cleanliness of the toilets in the AAM. Close to 80 percent agreed/strongly agreed that the toilets were unclean/unusable.

Table 25 Table 3.5.6 Overall mean score of the NIOPDSS related to patient satisfaction (N=300)

Overall Mean Score	Std. Deviation	Minimum	Maximum
2.30	0.240	1.41	2.88

The overall mean score for patient satisfaction was 2.30 ± 0.24, suggesting that respondents had a positive perception regarding the service parameters related the services of the AMM

CHAPTER 4

DISCUSSION AND CONCLUSION

4. Discussion and Key Findings

Health Service Readiness and Availability

The current study aimed to assess the health service readiness and availability of NCD-related services in Ayushman Arogya Mandir (AAM) facilities in Jaunpur district, Uttar Pradesh, as well as the level of patient satisfaction with these services. Service readiness was assessed in terms of inputs like infrastructure, IT facilities, IEC and display boards and drugs and medicines whereas availability was assessed in terms of human resource availability and the service delivery outputs. Patient satisfaction was assessed through exit interviews using the NIOPDS scale.

Health Service readiness

4.1 Physical Infrastructure

The assessment of physical infrastructure across Ayushman Arogya Mandirs (AAMs) revealed both strengths and critical gaps. Most AAMs operated from government buildings (84 percent); however, it was observed that not all of them were built as Arogya mandirs and were functioning from rooms in the Panchayat Bhawan, government schools and residences of ANMs. Only half of the AAM buildings were in a good condition. These factors could compromise patient privacy, space for patient waiting area and service efficiency.

More than ninety percent of the AAMs were found generally clean. But only slightly more than half (56%) of the facilities had electricity backup. During the time of my visit, it was

reported that around 5 centres had no electricity for over a month severely affecting their service delivery including diagnostics.

41.3% reporting a functional 24×7 water supply. In many AAMs, water was available only through hand pumps, with no piped supply or drinking water facilities. This aligns with findings from a study on Basic Health Units (BHUs), where load shedding of both electricity and water was reported in 52% of facilities, leading to compromised healthcare delivery.(Rashid et al., 2023)

Clean and functional toilets, separate for male and females were found in just 13.3% of the AAMs. Lacks of functional toilets were reported as a major problem by the CHOs since they were forced to depend on nearby institutions or homes as well as the patients who had no other alternatives.

Almost all the AAMs (94.7%) had an arrangement to collect biomedical waste (BMW) from the AAMs but however during the study, it was observed that the availability of colour-coded bag for BMW required for safe segregation was highly inconsistent. Black bags were present in only28.0% of AAMs, yellow in 26.7%, red in 24.0%, and blue in merely 14.7%. This indicates that biomedical waste is not segregated and disposed of properly as per the national Biomedical Waste Management guidelines. These findings are similar to the finding reported by (Brar et al., 2022) in their assessment of Health and Wellness Centres in Punjab, where red and yellow bag availability was found to be critically low. However, disposable gloves were available in all the AAMs surveyed.

Tele-consultation rooms were available in 82.7% of AAMs with all necessary equipment's. However, none of the AAMs had internet connectivity. The complete lack of internet connectivity poses a serious operational limitation since the facilities provided cannot support real-time data entry, tele-consultation, or synchronous reporting, reducing their

impact to offline documentation rather than active decision support or service delivery enhancement. It was observed that routine data was being uploaded through their personal mobile networks.

In the AAMs, about 83% had citizen charters and IEC materials displayed and nearly all had contact details of referral institutions displayed, (97.3%)

Less than one fifths of the AAMs had the directional signage to them. Only 28% had adequate waiting space for patients, 15% had a complaint/suggestion box and 12% had the timings of the AAMs displayed for the public and a mere 5.3% of facilities had patient registration desks. This reflects major lacunae in terms of patient responsiveness and accountability of the AAMs to the beneficiaries.

Less than one third of the AAMs had adequate space for the staff, patients and materials and only close to 70% did not have screens in the examination area. This seriously affects patient experience and their privacy and confidentiality negatively.

Most AAMs did not have enough space for patients to wait and there were no separate rooms for ANMs and CHOs, leading to overcrowding and difficulty in service delivery. In one of the centres, ANC checkups and general consultations were conducted in the same open space due to the absence of room partitions or screen, lack of privacy was cited by patients as a barrier to attending follow-ups, particularly among women seeking NCD screening or gynaecological care.

Around 97% of the ANMs linked to the AAMs did not have an onsite accommodation facility for multipurpose worker (female) and therefore the vision for comprehensive service delivery at the sub-centre level remains unfulfilled.

4.1.1 Human Resources

The sample size of the study was 75 functional AAMs with CHOs present on the day of the researcher's visit. In the case of an AAM that was closed or non-functional, as per the study design the closet AAM in the same block was selected to attain the intended sample size. I had visited 81 centres among which five were non-functional/closed since the CHOs posted to those AAMs were on maternity leave, indicating that policies for human resource replacement in the case of a vacancy are not done efficiently leading to a disruption of services to the population covered by it.

These findings are consistent with the Chhattisgarh study (Tripathi et al., 2024), where 100% of Health and Wellness Centres (HWCs) had a CHO posted, and a majority had undergone the CHC bridge course or integrated training as part of their nursing education. Similarly, in Punjab (Brar et al., 2022), all but one HWC had a CHO posted, highlighting the fact that CHO training and deployment to the AAMs under the Ayushman Bharat initiative has been met.

CHOs were all trained as per the prescribed national standards and nearly all (98.7%) of the CHOs had job charts and structured weekly/monthly work plans in place reflecting high levels of role clarity and operational planning.

However, job planning and role clarity was poor among the ANMs. Among the ANMs present at the AAMs, only 58.7% of regular ANMs and 21.3% of contractual ANMs had their work plans. MPWs seemed to have the least planning, with only around 7% of them having their weekly plans displayed at the centre.

At the time of the visit of the researcher to the AAMs, none of the MPWs and only few ANMs and ASHAs was present at each centre. They were reportedly on field duty and were not verified. However, the work plans of all the workers were to be displayed in the AAMs. Although the studies from Punjab and Chandigarh (Tripathi et al., 2024) (Brar et al., 2022)

did not assess planning explicitly, field-level reports of role ambiguity suggest that structured supervision for support staff remains weak at the sub centres.

Availability of support staff at the AAMs was suboptimal. In the current study, only 64% of AAMs had a regular ANM posted, and fewer than 30% were present during field visits. Contractual ANMs and MPWs were even less available, with presence rates of just 9.3% and 5.3%, respectively. The Chhattisgarh study reported that only seven out of twenty-six HWCs had all human resources in place as per government guidelines, while the Punjab study also highlighted that several ANMs and MPWs were either shared across facilities or absent, with many MPWs assigned additional duties at higher facilities. The few ASHAs present during the study said, lack of a structured salary, recognition and institutional support renders their work in the field difficult and they reported that there were not equipped to deal with the patients who are unwilling to take medicines or accept the diagnosis of NCDs like hypertension and diabetes.

These consistent patterns indicate that while CHO deployment has been prioritized, peripheral staff availability and support structures have not kept pace and could undermine the team-based care model envisioned for HWCs and AAMs.

Field observations substantiated these gaps with vivid on-ground realities. In many AAMs, CHOs reported working alone without any ANM or MPW support, forcing them to handle clinical work, documentation, and medicine procurement independently. This pattern reflects challenges in human resource deployment and retention seen in other EAG states.

Some of the challenges reported by the CHOs were that they felt unsafe due to uncooperative villagers and lack of a boundary wall that could keep the materials and people safe. Many women CHOs reported that somebody had to accompany them to work

for their safety and this was particularly regarding CHOs who were working in isolated locations with no boundary walls, electricity, or staff quarters.

4.1.2 Availability and Functionality of Essential Clinical Tools and Equipment

The readiness of Ayushman Arogya Mandirs (AAMs) in terms of equipment and diagnostics for NCD screening presented a mixed scenario. The positive finding was that all facilities had functional stethoscopes (100%), and a high proportion were equipped with digital BP monitors (77.3%) and weighing scales (89.3%), ensuring minimum capacity to screen for hypertension and obesity. However, gaps remained in the availability of essential tools such as measuring tapes (56%), sphygmomanometers (42.7%), and flashlights (46.7%), while advanced tools like stadiometers (10.7%), examination lamps (4%), and tongue depressors (6.7%) were mostly absent. Similarly, though glucometers were present in 97.3% of facilities and test strips in 84%, supplies such as urine dipsticks (68%) and acetic acid (0%) were limited or entirely unavailable, affecting comprehensive screening capacity, especially for diabetes and cervical cancer.

These figures highlight that the availability of essential clinical tools was not uniform and around five centres which were NQAAS certified had all the functional equipment.

These findings align with results from a systematic review on health system readiness for NCDs at the primary care level, which found that most facilities across LMICs had partial equipment availability, with readiness often limited to hypertension screening, while tools for more advanced or broad-based care were rarely available. The review emphasized frequent shortages of lab materials and diagnostic tools needed for routine NCD care patterns echoed in this study where facilities lacked basic reagents like Benedict's solution and acetic acid (Kabir et al., 2022) **.** Comparable challenges were reported in a cross-sectional study in Manipur (Gupta, Gitanjali, Christina, L. Janani, et al., 2022)**,** where

primary health centres (PHCs) and community health centres (CHCs) were found to be underprepared for NCD care, with domain-wise readiness indexes of 47% and 66.3%, respectively. Thermometers, BP monitors, and weighing machines were available in most centres whereas reported low availability of specialized equipment, diagnostic reagents, and screening tools similar to the current study.

Both the above studies also highlighted that even when some tools were available, they were often non-functional or underutilized due to lack of staff training, poor recordkeeping, and inadequate follow-up systems. This was also evident during field visits in the current study, where expired glucometer strips, non-functional lamps, and unutilized tools were reported in several AAMs. In one of the AAMs, registers were not maintained, and diagnostic services were halted due to staff absence or equipment failure.

Overall, while the foundation for basic NCD screening exists in many AAMs, the lack of standardized, complete, and functional equipment, and essential screening supplies, hampers the full realization of comprehensive NCD care.

4.1.3 Essential Drugs and Medicines for Non-Communicable Disease (NCD)

The availability of essential medicines for non-communicable disease (NCD) management in Ayushman Arogya Mandirs (AAMs) also showed a mixed picture. First-line drugs for diabetes and hypertension care like Metformin was universally available (100.0%), followed by Glimepiride (96.0%) and Amlodipine (84.0%). However, the availability of other essential cardiovascular and antihypertensive drugs was low. Atenolol was present in only 72.0% of facilities, Furosemide in 60.0%, and Isosorbide dinitrate in less than 20%. More advanced agents such as Clopidogrel (17.3%), Hydrochlorothiazide (10.7%) and Enalapril (6.7%) were rarely available.

Insulin was absent in all facilities, indicating a critical gap in the continuum of diabetic care, particularly for insulin-dependent patients. These reflect inconsistencies in procurement, supply chain management, and facility-level stocking, all of which have direct implications for the continuity and quality of chronic disease management.

The results are consistent with other national and international findings. In Manipur (Gupta, Gitanjali, Christina, L. Janani, et al., 2022), suboptimal availability of essential cardiovascular and diabetic medications across PHCs and CHCs were noted. Insulin availability was scarce, and drugs like Enalapril and Clopidogrel were found in less than one-third of the facilities. Similarly, in Ghana, the Cardiovascular Risk Management project found that although hypertension and diabetes services were widely offered, medicine availability for insulin, thiazide diuretics, and ACE inhibitors were minimal and concluded that poor medicine readiness significantly hindered effective management of chronic conditions at the primary care level**.** (Hinneh et al., 2024)

Field-level observations in the present study further illustrated these challenges. In several AAMs CHOs reported having to procure essential medicines personally, due to delays or stock-outs in government supply. In 3-4 centres, expired reagents and absence of antihypertensive medications disrupted patient follow-up activities. These operational constraints weakened patient trust, with some patients discontinuing treatment after repeated medicine unavailability during follow-ups. These issues are not unique to Jaunpur and is a similar patter as seen across LMICs, including India and Ghana, as highlighted in recent comparative studies. (Hinneh et al., 2024)

4.1.4 Availability of IT equipment, furniture &Consumables and Hygiene Supplies

As mentioned earlier, despite 100% availability and functionality of digital tools such as desktops/laptops, tele-consultation platforms, and the CPHC-NCD application (E-Kavach),

a complete lack of internet connectivity and limited power back up poses serious operational setbacks.

CHOs across multiple AAMs reported that E-Kavach application frequently malfunctioned, often requiring them to enter data multiple times or resort to paper registers due to upload failures. There is a large gap between hardware availability and digital functionality duet to various issues related to systemic enablement like connectivity, software related issues, training and backend support.

Basic Emergency Tools and Maintenance Readiness

Emergency preparedness was limited across most facilities. Fire extinguishers were present in only 10.7% of AAMs, and examination bedsheets (50.7%), buckets (around 60%), and other routine items like Foley's catheters (9.3%) or urethral catheters (4.0%) were scarcely available. These gaps, although not directly linked to NCD care, reflect the fragile state of emergency and supportive services at the primary care level.

In several centres, CHOs mentioned that no functional torch, emergency bag, or fire response setup was present. Moreover, facilities lacked water connections for cleaning, compounding hygiene risks, especially in monsoon months where poor drainage further deteriorated sanitation.

Furniture and Fixtures

Basic furniture was largely adequate in most AAMs, with over 90% of facilities equipped with stools for attendants, office tables, chairs, and steel almirahs. These elements support basic administrative and clinical functionality. However, screen separators for patient privacy were present in only 41.3% of centres, which was visibly problematic during field observations.

Records and Health Promotion Activities

Community engagement activities were present in most Ayushman Arogya Mandirs (AAMs), with 100% celebrating health days and 85.3% maintaining yoga session records, indicating reasonably strong wellness promotion efforts. Field observations confirmed that while many AAMs had received printed IEC materials, these were often kept in storage rather than displayed, as staff were waiting for upcoming NQAS assessments to formally arrange them. This approach reflects a compliance-driven mindset, where IEC is treated as an administrative checkbox rather than a tool for consistent community engagement.

These findings stand in contrast to those from other study from Karnataka conducted among PHCs, 74% had materials promoting healthy diets and 66% displayed warning signs of cancer. This suggest that IEC activities are is weaker in the AAMs in Jaunpur. The gap may be due to differences in institutional maturity, staff training, or prioritization of IEC within service delivery routines.(Raj, Akshaya, et al., 2021)

Notably, none of the facilities had functional televisions or display units for broadcasting health awareness messages a key recommendation under the Government of India's IEC guidelines. The absence of audiovisual IEC further limits patient engagement, especially in low-literacy populations

Overall Readiness Score:

The mean readiness score of 49.59% indicates that, on average, facilities are underprepared to manage conditions like hypertension and diabetes. The median score of 48.25% shows that half of the facilities had scores below this level. The standard deviation of 11.54% suggests moderate variability in scores, with some facilities being significantly more or less prepared. The range of 61.4% and IQR of 13.16% indicate substantial variation in readiness, with scores ranging from 29.82% to 91.23%, highlighting the inconsistency in preparedness across facilities.

Previous conducted in Low- and Middle-Income Countries (LMICs) had widely adopted a 70% cut-off to categorize facilities as fully ready to manage chronic conditions such as hypertension and diabetes When compared to this benchmark, the findings of the present study indicate that most facilities fall significantly short of the readiness threshold, suggesting inadequate preparedness of the majority of Ayushman Arogya Mandirs to deliver comprehensive NCD services.(Rakhshanda et al., 2021),(Kabir et al., 2023)

5 NCD Services Availability

Screening coverage

On average, each AAM covered a population of approximately 8,007 individuals, with a target screening population (aged 30 plus) of 3,163. Screening coverage for diabetes and hypertension exceeded 70% across both genders, reflecting an encouraging reach of frontline NCD initiatives. These results are comparable to the service availability figures from the SARA study in Bangladesh, which reported high screening coverage (diabetes: 70%, CVD: 73%), though overall readiness remained suboptimal for future target (Mohammad Rashemdul Islam et al., 2016) The screening coverage for diabetes and hypertension was relatively high, with over 70% of the target population being screened for both conditions. This suggests effective outreach and initial engagement strategies at the primary care level. However, the screening rates for cancers were notably lower. Oral cancer screening coverage was about 31.67% for males and 20.93% for females, while breast and cervical cancer screenings were even lower, at 10.92% and 6.04% respectively. The median values for cancer screenings were zero in many cases, indicating that several centres reported little or no coverage. The high standard deviations, particularly for cancer screening indicators, suggest wide variation in service coverage across facilities.

Despite considerable outreach for screening, the transition from screening to diagnosis and treatment appeared limited. Only 41.97 individuals per facility were newly diagnosed with diabetes, and 40.51 with hypertension, suggesting potential under-diagnosis or weak follow-up mechanisms. Furthermore, less than 36 individuals per AAM were reported to be on treatment, and only around 33 remained under regular follow-up for either condition, highlighting a drop-off in continuity of care.

These findings point toward a 'screen-and-refer' model that is not yet fully functional in practice. While initial outreach and screening appear strong for diabetes and hypertension, diagnosis, initiation of treatment and follow-up services require urgent strengthening. Barriers may include limited diagnostic tools, inconsistency in terms of drug and reagent availability, poor maintenance of equipment and facilities, poor tracking systems, patient non-compliance, and lack of structured referral. CHOs also expressed frustration with patient attrition post-referral, and lack of feedback from higher facilities.

Referral and Diagnosis:

The proportion of individuals identified as suspected cases and referred for further management was relatively low across all conditions. For diabetes and hypertension, the mean suspected and referral rates ranged between 5–6% for both males and females. Referral rates for oral cancer were 2.50% for males and 1.75% for females, with a high standard deviation indicating wide inter-facility variation. Referrals for breast and cervical cancer were negligible highlighting extremely limited follow-up or identification in these areas across centres. The findings of the current study align closely with patterns observed in similar low- and middle-income countries, such as Myanmar.(AUNG et al., 2021) In a study conducted across 242 primary care facilities in Taunggyi, Loilem, and Linkhae, it was observed that while target populations for NCD screening were well-defined, the actual service utilization remained modest, particularly in terms of referrals, diagnosis, and

follow-up care. This resonates with our observations from Ayushman Arogya Mandirs (AAMs), where despite achieving high screening coverage for diabetes and hypertension, significant drop-offs were evident at each subsequent stage of care. The Myanmar study similarly highlighted limited referral activity and inconsistent patient follow-up, reflecting system-level constraints in sustaining long-term NCD care at the primary level.(AUNG et al., 2021)

Treatment and Follow-Up:

The transition from diagnosis to treatment and follow-up care showed a declining trend. For diabetes and hypertension, the number of individuals initiated on treatment and those on regular follow-up were slightly lower than the number of new diagnoses, indicating some attrition. For instance, in diabetes management, the average number of new diagnoses was approximately 42, while those on treatment and follow-up were around 35 and 33 respectively. This pattern was similar for hypertension. Despite robust screening, the transition to diagnosis and management showed steep drop-offs. On average, only about 42 individuals per facility were newly diagnosed with diabetes and 40 with hypertension. Treatment rates were similarly limited, with roughly 35 individuals per AAM being initiated on therapy and fewer than 34 continuing on follow-up. These figures suggest missed opportunities in continuity of care. The study from Surendranagar, Gujarat, echoed this issue, citing inadequate follow-up and inconsistent medicine availability, which contributed to high treatment default rates (Jasani et al., 2013)

However, for cancer cases, the numbers were significantly lower. The average number of new diagnoses for oral cancer was 0.11, with treatment and follow-up cases being almost negligible. Breast and cervical cancers had virtually no cases progressing to treatment or follow-up, reflecting a critical gap in the continuum of care. The weakest link across all service categories was cancer screening and management. Oral cancer screening reached

only 469 males and 264 females per facility on average. The Manimajra and Bangladesh studies both highlighted cervical cancer service availability at only 25% and lower, and similarly reported a lack of diagnostic capacity and medicines for cancer management at all facility levels(Jasani et al., 2013)**,** (Mohammad Rashedul Islam et al., 2016)

Service Utilization Patterns:

There was a noticeable drop-off in subsequent stages of care, including referral, diagnosis, treatment initiation, and follow-up. This attrition could be attributed to various factors such as inadequate referral systems, lack of patient awareness, or systemic barriers within the healthcare infrastructure. The situation is more concerning for cancer care services, where the entire cascade from screening to treatment is markedly weak, necessitating urgent attention to improve service delivery mechanisms.

Field observations from the current study further confirmed that low referral and follow-up for cancers were not due to lack of perceived burden but rather due to infrastructural and logistical constraints. Facilities lacked trained female providers, private spaces for examinations, and acetic acid for VIA testing, contributing to poor uptake. Moreover, community-level stigma and hesitancy around cancer diagnosis further limited participation.

Overall, while Ayushman Arogya Mandirs have achieved commendable coverage in NCD screening especially for diabetes and hypertension the system continues to underperform in diagnosis confirmation, treatment initiation, and patient retention across the care pathway. These trends parallel findings from readiness assessments in India and neighbouring countries like Bangladesh, which point toward systemic gaps in human resources, diagnostics, medicine supply, community engagement, and cancer-specific

service availability(Jasani et al., 2013), (Mohammad Rashedul Islam et al., 2016), (Thakur and Nangia)

4.2 Patient Satisfaction assessment - Socio-demographic information

The socio-demographic profile of patients attending Ayushman Arogya Mandirs (AAMs) offers key insights into the population segments availing of NCD services. The average age of participants was 55.82 years (±11.92), with the highest concentration in the 46–65-year range. This finding is consistent with other research which shows that increasing age is associated with both higher NCD prevalence and greater satisfaction with health services, possibly due to heightened health awareness and dependency on public facilities in older age groups (Kinra et al., 2010)

The higher proportion of female respondents (58.7%) in our study echoes findings from patient satisfaction studies in both India and Nepal, where females tended to report more frequent use of public health services than males (Mukesh Adhikari, 2021) This may reflect greater daytime availability or a higher burden of chronic illness among women, especially in rural contexts, warranting continued attention to gender-sensitive service delivery.

Caste and socio-economic data further emphasize the equity-oriented role of AAMs. More than 70% of patients belonged to either OBC or SC communities, which mirrors patterns in community-based studies from Tamil Nadu where individuals from lower social classes were more dependent on public NCD services and yet reported relatively lower satisfaction (Ravichandran and Olickal, 2023).In our study, 72.7% of patients were from Below Poverty Line (BPL) households highlighting the reach of AAMs among the economically vulnerable.

Educational attainment was notably low in our sample, with nearly 59% having no formal or only primary-level schooling. This mirrors trends seen in outpatient satisfaction studies

from Puducherry, where low education levels were associated with reduced understanding of NCD services and lower satisfaction with physician communication and medicine instructions (Rajagopal et al., 2021). The implication here is clear: health literacy interventions and simplified communication methods must accompany service expansion.

4.2.1 Patient satisfaction services provided by AAM by using NIOPDS

The assessment of patient satisfaction using the North India Outpatient Department Satisfaction Scale (NIOPDSS) across 300 respondents revealed generally positive experiences with services at Ayushman Arogya Mandirs (AAMs). Most participants expressed high satisfaction with the accessibility (96%) and location (95.6%) of the facilities, indicating effective geographical placement. Administrative processes showed mixed results while nearly all respondents (97.7%) reported no queues, 96% noted the absence of separate queues for women or the elderly. Though consultation waiting times were rated as minimal (99% satisfaction), over 70% of patients found the waiting area to lack adequate space. Interactions with physicians were rated highly, with almost all patients feeling listened to (100%), given clear medication advice (99.6%), and treated courteously (99.4%). Pharmacy services were similarly appreciated, with 99% acknowledging prompt and clear medicine dispensing. However, basic amenities revealed shortcomings: 92% reported unavailability of drinking water, and 78.3% rated toilets as unclean or unusable, though overall cleanliness was rated well by 98.3% of respondents. The overall mean satisfaction score was 2.30 ± 0.24, indicating general agreement with positive service statements while also pointing to infrastructure-related areas requiring urgent attention.

A study evaluating patient satisfaction at Health and Wellness Centres (HWCs) under the Ayushman Bharat scheme revealed high levels of contentment among beneficiaries. An overwhelming 97.7% of respondents perceived healthcare providers as having a positive attitude, and 95.5% felt that doctors demonstrated genuine interest in their overall well-

being. However, satisfaction levels varied between rural and urban HWCs. Approximately 79.3% of beneficiaries attending rural HWCs expressed satisfaction with the overall treatment received, compared to 62.8% among those attending urban HWCs, indicating a lower satisfaction level in urban settings which aligns with this study.(Sivakumar et al., 2024)

Many patients have expressed dissatisfaction over the unavailability and frequent stock outs of common medications such as cough syrups, antibiotics, and topical analgesic gels or ointments. CHOs have indicated that their pharmaceutical inventory is often limited to just two antibiotics ciprofloxacin and amoxicillin with no access to antifungal or antiallergic medications. Consequently, when patients request treatments for conditions like coughs, CHOs can only provide multivitamin syrups, which may not adequately address their health concerns. This limitation in medicine availability not only hampers effective treatment but also contributes to patient dissatisfaction. This also indicates the need to ensure treatment protocols informed about antimicrobial resistance and antibiotic policy.

Additionally, some patients reported dissatisfaction regarding the absence of treatment for conditions like haemorrhoids (piles), for which they had to seek private care. This led to frustration, particularly in cases requiring urgent relief. Nonetheless, many respondents conveyed a sense of gratitude and progress, with one remarking, *"Jha Kuch v Nhi tha phle, waha ye agya" (Where there was nothing, now at least there is something)* implying that the presence of even basic services at the AAMs is a significant improvement from an earlier situation of no healthcare access at all. This sentiment may be the reason for high patient satisfaction with the AAMS, despite the several limitations and challenges described earlier

Conclusion

This study aimed to assess the readiness and availability of Ayushman Arogya Mandirs (AAMs) for delivering Non-Communicable Disease (NCD) services and to evaluate patient satisfaction with these services in Jaunpur district, Uttar Pradesh. The findings reveal significant insights into the strengths and systemic gaps that impact the delivery of primary NCD care in rural India.

The study concludes that among the 75 Ayushman Arogya Mandirs in Jaunpur district, the mean readiness score was 49.59% in terms of facilities and resources available, indicating that the AAMs are only moderately ready and many are underprepared to manage conditions like hypertension and diabetes. More than half of the facilities had scores below this level and suggests variability in between facilities with some being more and others being less prepared.; highlighting the variability in preparedness across facilities.

However, previous studies in Low- and Middle-Income Countries (LMICs) had widely adopted a 70% cut-off to categorize facilities as 'fully ready' to manage chronic conditions such as hypertension and diabetes When compared to this benchmark, the findings of the present study indicate that most facilities fall significantly short of the readiness threshold, suggesting inadequate preparedness of the majority of Ayushman Arogya Mandirs to deliver comprehensive NCD services.(Rakhshanda et al., 2021) ,(Kabir et al., 2023)

The basic NCD services from the AAMs are well anchored by through a strong CHO engagement but their potential is limited by infrastructural inadequacies, inconsistent staffing, and diagnostic constraints. During the study five AAMs were closed since the CHOs were on maternity leave and no substitutes had been posted. Shortage of ANMs, MPWs, and ASHAs also undermines the multidisciplinary approach required for

comprehensive NCD care. Human resource deployment has to be made more efficient to ensure that the indented functions of the AAMs are carried out effectively.

The major deficiencies were related to lack of adequate space and facilities for patient care and other activities envisaged at the AAMs, inconsistent availability of drugs and reagents, lack of internet connectivity and electricity back up that renders many AAMs defunct in terms of patient care, data entry and tele-consultations.

Non availability of 24/7 water supply and toilet facilities affected the impede service quality and continuity of the AAMs and patient satisfaction. CHOs were universally present and trained, underscoring their role as the cornerstone of service delivery at AAMs. However, the irregular availability of ANMs, MPWs, and ASHAs undermines the multidisciplinary approach required for comprehensive NCD care.

However, overall patient satisfaction with AAMs was positive in terms of cleanliness, provider behaviour and communication, and pharmacy services consistent with previous studies from similar contexts. Their satisfaction was poor with regard to the crowding and inadequate space, unavailability of drinking water, clean and usable toilets and lack of separate queues for women and elderly.

Recommendations

Targeted intervention Ensure functional digital infrastructure by providing internet connectivity at all AAMs for e-health, teleconsultation, and reporting systems. Infrastructural and human resource requirements meet the guidelines specified. Availability of clean drinking water, functional toilet facilities, and power supply through solar supplies and inverters are to be made available to all centres to improve hygiene standards, patient care and patient satisfaction. Strengthening of human resource capacity at the AAMs with

special attention to substitute posting in case of vacancies especially of CHOs to keep the AAMs functional. Ensuring that all positions of ANMs, MPWs and ASHAs are posted, and training and motivation are provided with a focus on NCD management will improve the NCD care services from the AAMs. Diagnostic and Treatment capacity of the AAMs can be improved only if there is a regular and uninterrupted supply of medicines and diagnostic reagents and this could be efficiently carried out through an online inventory system that provides real time feedback. Patient satisfaction and experiences with the AAMs for NCD care requires investment on waiting areas, queue systems and provision of basic amenities like drinking water and toilet facilities and also a continuous feedback system from the beneficiaries.

Introduce patient feedback systems to continuously monitor and improve care quality at AAMs. Improve referral and outreach mechanisms for better follow-up and continuity of care.

Strengths of the Study

- This study is among the first to assess the readiness and patient satisfaction of AAMs in Jaunpur district Uttar Pradesh, addressing a critical research gap.
- A comprehensive, structured checklist and validated patient satisfaction tool (NIOPDSS) were used.
- The study employed both facility-level data and patient perspectives, providing a holistic evaluation of service delivery.
- The study had a single investigator and the potential of intra-observer variability is avoided

Limitations of the Study

- As the study focused solely on rural AAMs in Jaunpur district, the findings may not be generalizable to urban settings or other regions of UP.
- Purposive sampling of patients might have introduced selection bias, and satisfaction responses may be subject to social desirability bias.
- Data on health outcomes (e.g., blood sugar or BP control rates) were not included and could have added deeper insight into service effectiveness.
- Field-level outreach activities for NCDs were not assessed, as the study was limited to services provided within the Ayushman Arogya Mandir (AAM) facilities.

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ANNEXURE –I

Participant Information Sheet (CHO)

Namaste!! I am Dr Neha Tiwari, currently pursuing 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. I am studying **"**Health Service Readiness and Availability of Ayushman Arogya mandir facilities for Non-Communicable Diseases in Jaunpur district Uttar Pradesh" as a part of my course work.

You are being invited to participate in this research study. Before you decide on whether to participate in this study or not, 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:

The purpose of this study is to evaluate the health service readiness and availability of Ayushman Arogya Mandirs in Jaunpur District, Uttar Pradesh, for the effective delivery of Non-Communicable Disease (NCD) services. This evaluation aims to understand the availability of necessary infrastructure, resources, and healthcare personnel required to provide NCD care at these centers. Additionally, the study will gauge patient satisfaction with the overall healthcare services through patient exit interviews, providing insights into the quality of care and areas for improvement in service delivery.

If you agree to participate in the study, you will be asked to complete an interview schedule that will include questions focussed on Physical infrastructure, Human resources, medical

equipment and consumables. The interview will take approximately 30-35 minutes of your valuable time.

Potential risks and Inconveniences

Participating in the study imposes no risk to your health. Although while answering some questions you may feel anxious.

Possible benefits:

Your participation in the study will not give any direct benefit to you now other than knowing health system readiness and availability. However, the findings from the study will help us to understand the service delivery of Ayushman Arogya mandir.

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 Neha Tiwari

Principal Investigator

MPH 2023, AMCHSS, SCTIMST

Contact Number: 7022851278

Email: nehatiwari.2912@gmail.com

Dr Srinivas G

Member secretary

Institutional Ethics Committee

SCTIMST, Trivandrum- 695011

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Co-investigator:

Dr Manju Nair

Scientist D

AMCHSS, SCTIMST,

Medical College (PO),

Thiruvananthapuram-11

Office: 0471-2524235/2524638

Informed Consent Form

I_____ have read the previous mentioned information or it has been read to me. I realize that the study will not cause any harm to me, and I have no direct benefits.

from participating in the study. Also, I understand that my identity/personal information will be kept confidential.

By signing, I confirm my voluntary participation in this study. I agree to be contacted again if any missing information or further clarification is needed. I understand my right to withdraw from the interview at any time without any obligation.

Signature of Participant: _____

Thumb impression of participant (if unable to sign):

Date: / /

If the participant is unable to sign, a witness must sign below:

A literate witness must sign (if possible, this person should be selected by the participant and should have no connection to the research team).

I have witnessed the accurate reading of the consent form to the potential participant, and the individual has had the opportunity to ask questions. I confirm that the individual has given consent freely.

Name of witness: _____

Signature of witness: _____ Date: / /

Statement by the researcher/person taking consent

I confirm that the participant was given an opportunity to ask questions about the study, and all the questions asked by the participant have been answered correctly and to the best of my ability. I confirm that the individual has not been coerced into giving consent, and the consent has been given freely and voluntarily.

Name of Researcher/person taking the consent_____

Signature of Researcher /person taking the consent_____

Date: / /

Place: _____

ANNEXURE –II

Hindi Participant Information Sheet (Patient)

अच्युत मेनन सेंटर फॉर हेल्थ साइंस स्टडीज, श्री चित्रा तिरुनल इंस्टीट्यूट फॉर मेडिकल साइंसेज एंड टेक्नोलॉजी, त्रिवेंद्रम, केरल, 695011

प्रतिभागी सूचना पत्र

मैं नेहा तिवारी, वर्तमान में अच्युत मेनन सेंटर फॉर हेल्थ साइंस स्टडीज (AMCHSS), श्री चित्रा तिरुनल इंस्टीट्यूट फॉर मेडिकल साइंसेज एंड टेक्नोलॉजी, त्रिवेंद्रम, केरल में मास्टर ऑफ पब्लिक हेल्थ (एमपीएच) कर रही हूं। मैं अपने पाठ्यक्रम के एक भाग के रूप में "जौनपुर जिला उत्तर प्रदेश में गैर-संचारी रोगों के लिए स्वास्थ्य सेवा तत्परता और आयुष्मान आरोग्य मंदिर सुविधाओं की उपलब्धता" का अध्ययन कर रही हूं।

आपको इस शोध अध्ययन में भाग लेने के लिए आमंत्रित किया जा रहा है। इससे पहले कि आप यह तय करें कि इस अध्ययन में भाग लेना है या नहीं, आपको यह समझना चाहिए कि शोध क्यों किया जा रहा है और इसमें क्या शामिल होगा। कृपया सूचना पत्र और सहमति पत्र को ध्यान से पढ़ें/सुनें और यदि आपको कोई संदेह है तो पूछने में संकोच न करें।

अध्ययन का उद्देश्य

इस अध्ययन का उद्देश्य गैर-संचारी रोग (एनसीडी) सेवाओं के प्रभावी वितरण के लिए उत्तर प्रदेश के जौनपुर जिले में स्वास्थ्य सेवा की तैयारी और आयुष्मान आरोग्य मंदिरों की उपलब्धता का मूल्यांकन करना है। इस मूल्यांकन का उद्देश्य इन केंद्रों पर एनसीडी देखभाल प्रदान करने के लिए आवश्यक बुनियादी ढांचे, संसाधनों और स्वास्थ्य कर्मियों की उपलब्धता को समझना है। इसके अतिरिक्त,

अध्ययन रोगी निकास साक्षात्कार के माध्यम से समग्र स्वास्थ्य सेवाओं के साथ रोगी की संतुष्टि का आकलन करेगा, जो सेवा वितरण में सुधार के लिए देखभाल की गुणवत्ता और क्षेत्रों में अंतर्दृष्टि प्रदान करेगा।

यदि आप अध्ययन में भाग लेने के लिए सहमत हैं, तो आपको एक साक्षात्कार कार्यक्रम पूरा करने के लिए कहा जाएगा जिसमें भौतिक बुनियादी ढांचे, मानव संसाधन, चिकित्सा उपकरण और उपभोग्य सामग्रियों पर केंद्रित प्रश्न शामिल होंगे। साक्षात्कार में आपके मूल्यवान समय के लगभग 30-35 मिनट लगेंगे।

संभावित जोखिम और असुविधाएं

अध्ययन में भाग लेने से आपके स्वास्थ्य के लिए कोई जोखिम नहीं होता है। हालांकि कुछ सवालों के जवाब देते समय आप चिंतित महसूस कर सकते हैं।

संभावित लाभ

अध्ययन में आपकी भागीदारी स्वास्थ्य प्रणाली की तैयारी और उपलब्धता को जानने के अलावा अब आपको कोई प्रत्यक्ष लाभ नहीं देगी। हालांकि, अध्ययन के निष्कर्ष हमें आयुष्मान आरोग्य मंदिर की सेवा वितरण को समझने में मदद करेंगे।

लागत और वित्तीय लाभ

इस अध्ययन में भाग लेने के लिए कोई कीमत नहीं है। भागीदारी पूरी तरह से स्वैच्छिक है, और कोई भुगतान प्रदान नहीं किया जाएगा। इसी तरह, अध्ययन में भाग लेने के लिए पैसे नहीं लिए जाएंगे।

गोपनीयता

इस अध्ययन में प्राप्त जानकारी को सख्ती से गोपनीय रखा जाएगा। प्रत्येक प्रतिभागी को एक प्रतिभागी पहचान संख्या सौंपी जाएगी जो एकत्र किए गए डेटा की सख्त गोपनीयता बनाए रखने में

मदद करेगी। प्रकाशनों या रिपोर्ट्स में जानकारी की रिपोर्ट करने में आपके नाम का उपयोग नहीं किया जाएगा।

अध्ययन से वापसी

अध्ययन में आपकी भागीदारी पूरी तरह से स्वैच्छिक होगी। आप स्वतंत्र हैं और अध्ययन के दौरान किसी भी समय वापस लेने का अधिकार है। अध्ययन में भाग लेने या भाग लेने के लिए कोई जुर्माना नहीं होगा।

संपर्क जानकारी

यदि आपके पास शोध से संबंधित कोई प्रश्न हैं, तो आप मुझसे संपर्क कर सकते हैं

डॉ. नेहा तिवारी

प्रधान अन्वेषक

एमपीएच 2023, एएमसीएचएसएस, एससीटीआईएमएसटी

संपर्क नंबर: 7022851278

ईमेल: nehatiwari.2912@gmail.com

गाइड,

डॉ. मंजू न. र.

वैज्ञानिक डी

अच्युता मेनन सेंटर फॉर हेल्थ साइंस स्टडीज

श्री चित्रा तिरुनल इंस्टीट्यूट फॉर मेडिकल साइंसेज एंड टेक्नोलॉजी त्रिवेंद्रम, केरल

टेलीफोन (कार्यालय):

ईमेल: manjun@sctimst.ac.in

वैकल्पिक रूप से, निम्नलिखित पते पर हमारे संस्थान की आचार समिति के सदस्य सचिव:

डॉ श्रीनिवास जी.

सदस्य सचिव संस्थागत नैतिकता समिति

स्टिमस्ट, त्रिवेंद्रम 695011

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सूचित सहमति

मैंने _____ पिछली उल्लिखित जानकारी पढ़ी है या यह मुझे पढ़कर सुनाई गई है। मुझे एहसास है कि अध्ययन से मुझे कोई नुकसान नहीं होगा, और अध्ययन में भाग लेने से मुझे कोई प्रत्यक्ष लाभ नहीं है। साथ ही, मैं समझता/ समझती हूं कि मेरी पहचान/व्यक्तिगत जानकारी गोपनीय रखी जाएगी।

हस्ताक्षर करके, मैं इस अध्ययन में अपनी स्वैच्छिक भागीदारी की पुष्टि करता// करती हूं। यदि कोई गुम जानकारी या आगे स्पष्टीकरण की आवश्यकता है तो मैं फिर से संपर्क करने के लिए सहमत हूं। मैं बिना किसी दायित्व के किसी भी समय साक्षात्कार से हटने का अपना अधिकार समझता/ समझती हूं।

प्रतिभागी के हस्ताक्षर: _____

प्रतिभागी के अंगूठे का निशान (यदि हस्ताक्षर करने में असमर्थ है):

तारीख: / /

यदि प्रतिभागी हस्ताक्षर करने में असमर्थ है, तो एक गवाह को नीचे हस्ताक्षर करना होगा:

एक साक्षर गवाह को हस्ताक्षर करना चाहिए (यदि संभव हो तो, इस व्यक्ति को प्रतिभागी द्वारा चुना जाना चाहिए और अनुसंधान टीम से कोई संबंध नहीं होना चाहिए)।

मैंने संभावित प्रतिभागी को सहमति फॉर्म की सटीक रीडिंग देखी है, और व्यक्ति को प्रश्न पूछने का अवसर मिला है। मैं पुष्टि करती हूं कि व्यक्ति ने स्वतंत्र रूप से सहमति दी है।

गवाह का नाम: _____

गवाह के हस्ताक्षर: _____ तारीख: /

सहमति लेने वाले शोधकर्ता/व्यक्ति द्वारा वक्तव्य

मैं पुष्टि करती हूं कि प्रतिभागी को अध्ययन के बारे में प्रश्न पूछने का अवसर दिया गया था, और प्रतिभागी द्वारा पूछे गए सभी प्रश्नों का सही उत्तर दिया गया है और मेरी क्षमता के अनुसार। मैं पुष्टि करती हूं कि व्यक्ति को सहमति देने के लिए मजबूर नहीं किया गया है, और सहमति स्वतंत्र रूप से और स्वेच्छा से दी गई है।

शोधकर्ता / सहमति लेने वाला व्यक्ति का नाम _____

शोधकर्ता/ सहमति लेने वाला व्यक्ति के हस्ताक्षर _____

तारीख: / /

स्थान: _____

ANNEXURE –III

Interview Schedule – English

Interview Schedule to assess Health Service Readiness and Availability of Ayushman Arogya mandir facilities for Non- Communicable Diseases in Jaunpur district Uttar Pradesh

All information obtained from this interview will remain confidential and will be used for research purposes only. Individual information will not be disclosed to anyone under any circumstances.

Date: __/____/2025

Time: __am/__pm

S.NO	Section 1- SURVEY INFORMATION	
1.1	District name	
1.2	Block Name	
1.3	Unique ID of AAM visited	

	Name of AAM (SC)	
	Name of PHC	
1.4	Total no. Villages under AAM	
	Total Population under AAM area	
	Distance from nearest referral centre (PHC/CHC)	
	Contact details of Nearest Referral Institute available (Yes/No)	

S.NO	**Facility Assessment Checklist**	
	Section 2- Physical Infrastructure	**YES/NO**
2.1	Whether Repairs and upgrading of HWC completed	
2.2	Whether Patient reception and Registration Centre available	
2.3	Whether AAM Logo and Name of AYUSHMAAN BHARAT in local language displayed/Painted at HWC Building	
2.4	Whether Six illustrations displayed at AAM building (Maternal Health, Immunisation, Yoga, Tele consultation, Drug Distribution, Health Awareness)	
2.5	Whether AAM Functioning in Govt. building	
2.6	Whether AAM Building in good condition	
2.7	Whether AAM Building has Electricity with functional power back up	

2.8	Whether AAM Building has Running 24*7 water supply	
2.9	Whether AAM Building has Drinking Water facility Available at AAM	
2.10	Whether AAM premise has MPW (F) Quarter available	
2.11	General cleanliness in the facility	
2.12	Whether is MPW (F) residing at AAM	
2.13	Whether AAM Building has Functional and clean toilet available (separate for Male & female)	
2.14	Availability of complaint/ suggestion box	
2.15	Availability of adequate space as per services available & Workload	
2.16	Availability of room for Tele-consultation facility (laptop, Internet, Zoom installed)	
2.17	Whether AAM has Wellness room for provision of Yoga sessions	
2.18	Citizen Charter and display of relevant IEC material to enable community awareness on services available at AAM	
2.19	Appropriate Drainage	
2.20	Arrangement for Bio Medical Waste Management	

S.NO	**Section 3- Human Resource**	
3.1	CHO (Community Health Officer) is available (Yes/No) If yes,	
A	AAM Training /Orientation Completed	
B	Present on Day of Visit	
C	Job Charts/Job Description Available	

D	Monthly/Weekly visits/activity plan available	
3.2	MPW is available If yes,	
A	AAM Training /Orientation Completed	
B	Present on Day of Visit xiii Annexures	
C	Job Charts/Job Description Available	
D	Monthly/Weekly visits/activity plan available	
3.3	ANM (Regular) is available If yes,	
A	AAM Training /Orientation Completed	
B	Present on Day of Visit	
C	Job Charts/Job Description Available	
D	Monthly/Weekly visits/activity plan available	
3.4	ANM (Contractual) is available	
A	AAM Training /Orientation Completed	
B	Present on Day of Visit	
C	Job Charts/Job Description Available	
D	Monthly/Weekly visits/activity plan available	
3.5	ASHA is available If yes,	
A	How many ASHAs are under SC area	
B	How many ASHAs AAM Training /Orientation Completed	
D	How many ASHAs Job Charts/Job Description Available	
E	How many ASHAs Monthly/Weekly visits/activity plan available	
3.6	Provision of maintaining (registers/biometric etc.) Attendance of staff available	

S.NO	**Section 4- Equipment's/Consumables**	**Available (Yes/No)**	**Functional /Currently in Working condition (Yes/No)**	**If not, how long has it not been not working**
4.1	**Clinical Material, Tools and Equipment**			
A	Flashlight/Torch			
B	Weighing Scale, Adult 125 kg/280 lb			
C	Sphygmomanometer Aneroid 300 mm with cuff IS: 7652			
D	Cusco's/Graves Speculum vaginal bi-valve			
E	Sim's retractor/depressor			
F	Sims Speculum vaginal double ended ISS Medium			
G	Stethoscope			
H	Measuring Tape			
I	BP Apparatus (Digital)			
J	Digital Thermometer			
K	Examination Lamp			
L	Tongue Depressor			
M	Mouth Mirror			
N	Stadiometer			
4.2	**Consumables and miscellaneous items**	**Available (Yes/No)**		
A	Syringe (10 cc, 5 cc, 2 cc) and AD Syringes (0.5 ml and 0.1 ml) for immunization			
B	Disposable gloves			
C	Mucus extractor			

D	Disposable Sterile Urethral Catheter (rubber plain 12 fr)	
E	Foley's catheter (Adult)	
F	Fire Extinguisher	
G	Buckets Big (Plastic)	
H	Buckets Small (Plastic)	
I	Dust bins- Blue	
J	Dust Bins – Red	
K	Dust Bins – Yellow	
L	Dust Bins- Black	
M	Black Disposable bags	
N	Red Disposable bags	
O	Yellow Disposable bags	
P	Blue Disposable bags	
Q	Hand Towels	
R	Bed Sheet for Examination Tables	
S	Cleaning material, detergent	
T	Insecticide treated nets	
4.3	**Furniture and Fixtures**	**Available (Yes/No)**
A	Chairs for patient waiting area	
B	Foot Step	
C	Office Chair	
D	Office Table	
E	Screen Separators with stand	
F	Steel Almirah / Cupboard/storage chests	
G	Stool for attendants	
4.4	**Lab -Diagnostic Materials and Reagents for Screening**	**Available (Yes/No)**
A	Glucometer	
B	Glucometer Testing Strips	
C	N/10 Hydrochloric Acid	
D	Reagents such as Hydrochloric acid, acetic acid,	

	Benedict's solution, Bleaching powder, Hypochlorite solution, Methylated spirit etc.		
E	Acetic Acid Solution		
F	Dipsticks for urine test for protein and sugar (1 container of 25 strips)		
4.5	**IT Equipment**	**Available (Yes/No)**	**Functional (Yes/No)**
A	Tablets for CHO, MPWs available		
B	Desktop/ laptop for medical officer/CHO available		
C	Internet Connectivity		
D	CPHC- NCD application being used		
E	Daily entry report being done in portal		
F	Tele-consultation operational		
G	Echo Spoke established and functional		
4.6	**Drugs/Medicine**	**Available (Yes/No)**	
4.6.1	antihypertensive medicines		
A	Amlodipine		
B	Atenolol		
C	Enalapril		
D	Propanalol		
4.6.2	Cardiovascular medicines		
A	Isosorbide dinitrate		
B	Clopidogrel		
4.6.3	diuretics		
A	Furosemide		
B	Hydrochlorothiazide		
4.6.4	antidiabetic		
A	Glimepiride		
B	Metformin		

C	Insulin (Soluble)	
4.7	**List of Diagnostic Services**	**Available (Yes/No)**
	Urine Dipstick*- urine albumin and sugar	
	Blood Glucose* (glucometer)	
4.8	**Records &Display of Health Promotion activities**	**Available (Yes/No)**
	Approach roads have directions to the AAM	
	AAM Logo and Name of AYUSHMAAN BHARAT in local language displayed/Painted at AAM Building	
	Six illustrations displayed at AAM building (Maternal Health, Immunisation, Yoga, Tele-consultation, Drug Distribution, Health Awareness	
	Timings of the AAM displayed	
	Area distribution of the MPW and name of MPW	
	Other IEC material e.g. IEC wall. TV for video display etc.	
	Record of Yoga Sessions conducted by trained yoga instructor/trainer	
	Health days being celebrated as per health Calander	

S.NO	**Service Delivery Checklist**	
A	**Section 5 - NCD Service delivery at SC -Screening (Male/Female)** **(For the reference period: last 12 months)**	**TOTAL NO (Male/Female)**

	No. of Individual screened for Diabetes	
	No. of Individual screened for Hypertension	
	No. of Individual screened for Oral cancer	
	No. of Individual screened for Breast cancer	
	No. of Individual screened for Cervical cancer	
B	**NCD Service delivery at SC - suspected and referred for confirmation (Male/Female)** **(For the reference period: last 12 months)**	
	No. of Individual suspected and referred for confirmation for Diabetes	
	No. of Individual suspected and referred for confirmation for Hypertension	
	No. of Individual suspected and referred for confirmation for Diabetes & Hypertension	
	No. of Individual suspected and referred for confirmation for Oral cancer	
	No. of Individual suspected and referred for confirmation for Breast cancer	
	No. of Individual suspected and referred for confirmation for Cervical cancer	
C	**NCD Service delivery at SC - Diagnosed (New) (Male/Female)** **(For the reference period: last 12 months)**	
	No. of Individual Diagnosed (New) for Diabetes	
	No. of Individual Diagnosed (New) for Hypertension	

	No. of Individual Diagnosed (New) for Diabetes & Hypertension	
	No. of Individual Diagnosed (New) for Oral cancer	
	No. of Individual Diagnosed (New) for Breast cancer	
	No. of Individual Diagnosed (New) for Cervical cancer	
D	**NCD Service delivery at SC -New Diagnosed on treatment (Male/Female)** **(For the reference period: last 12 months)**	
	No. of Individual New Diagnosed on treatment for Diabetes	
	No. of Individual New Diagnosed on treatment for Hypertension	
	No. of Individual New Diagnosed on treatment for Diabetes & Hypertension	
	No. of Individual New Diagnosed on treatment for Oral cancer	
	No. of Individual New Diagnosed on treatment for Breast cancer	
	No. of Individual New Diagnosed on treatment for Cervical cancer	
E	**NCD Service delivery at SC - New / old cases on follow-up (Male/Female)** **(For the reference period: last 12 months)**	
	No. of Individual New / old cases on follow-up for Diabetes	
	No. of Individual New / old cases on follow-up for Hypertension	
	No. of Individual New / old cases on follow-up for Diabetes & Hypertension	
	No. of Individual New / old cases on follow-up for Oral cancer	
	No. of Individual New / old cases on follow-up for Breast cancer	
	No. of Individual New / old cases on follow-up for Cervical cancer	

F	**NCD Service delivery at SC - Referral for Higher centre (Male/Female)** **(For the reference period: last 12 months)**	
	No. of Individual referred to higher centre for Diabetes	
	No. of Individual referred to higher centre for Hypertension	
	No. of Individual referred to higher centre for Diabetes & Hypertension	
	No. of Individual referred to higher centre for Oral cancer	
	No. of Individual referred to higher centre for Breast cancer	
	No. of Individual referred to higher centre for Cervical cancer	

PATIENT EXIT INTERVIEW TOOL

All information obtained from this interview will remain confidential and will be used for research purposes only. Individual information will not be disclosed to anyone under any circumstances

Date: __ /___ /2025

Time: _am /_pm

Dear patient you have received OPD services satisfactory questionnaire at this health facility. Please take some time and fill this questionnaire. Please record your satisfaction with each of the items in the following questionnaire. Please write 9 if you have no-opinion

Table A: Item level descriptive statistics of the NIOPDSS

S.no	Section 1- PERSONAL AND SOCIODEMOGRAPHIC INFORMATION

1.1	**On your last birthday how old were you?**	**_____ years**
1.2	**Sex**	**Male/Female/Others/ prefer not to say**
1.3	**Religion**	**□ Hindu** **□ Christian** **□ Muslim** **□ Others specify _____** **□ Prefer not to say**
1.4	**Caste**	**□ General** **□ OBC** **□ SC** **□ ST**
1.5	**What is your highest level of Education you have completed?**	**□ No formal schooling** **□ Less than primary school** **□ Primary school completed** **□ Secondary school completed** **□ High school completed** **□ Degree/diploma/ITI completed** **□ Post graduate and above**
1.6	**What is your current Marital Status? (Please enter the appropriate answer)**	**□ Single** **□ Married** **□ Divorced** **□ Separated** **□ Widowed**
1.7	**a) Socio Economic Status**	**□ APL** **□ BPL**
	b) What is the house type?	**□ Kachha** **□ Semi- pucca** **□ Pucca**

	C) Ownership of House	□ **Own** □ **On Rent** □ **On lease**

	Item of scale	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
	Location of the health facility					
1	Health institution is easily accessible	1	2	3	4	5
2	The health facility is conveniently located	1	2	3	4	5
	Administration					
3	There was a queue at the counter	1	2	3	4	5
4	There was a separate queue for ladies/elderly	1	2	3	4	5
5	short waits before doctor consultation)	1	2	3	4	5
	Waiting area					
6	Sitting space was adequate and chairs were comfortable	1	2	3	4	5
7	Fans and light working	1	2	3	4	5
	Physician parameters					
8	Doctor gave adequate time to explain the problem thoroughly	1	2	3	4	5
9	Doctor treated the patient in a very friendly and courteous manner	1	2	3	4	5
10	Doctor gave me clear advise for dosage and timing of medicine	1	2	3	4	5
11	Doctor listens carefully to what the patient has to say	1	2	3	4	5
	Pharmacy parameters					
12	There was availability of medicines in the pharmacy	1	2	3	4	5

13	Pharmacist explained me the prescription in a good way	1	2	3	4	5
14	Took little time to dispense medicines	1	2	3	4	5
	Basic facilities including misc. items					
15	There was proper arrangement of drinking water	1	2	3	4	5
16	Toilets were clean and in usable condition	1	2	3	4	5
17	Over all the hospital was clean	1	2	3	4	5

ANNEXURE –IV

Interview Schedule – Hindi (Patients)

इस साक्षात्कार से प्राप्त सभी जानकारी गोपनीय रहेगी और इसका उपयोग केवल शोध उद्देश्यों के लिए किया जाएगा। किसी भी परिस्थिति में व्यक्तिगत जानकारी किसी को नहीं बताई जाएगी।

दिनांक: __ /___ /2025

समय: ____सुबह/__शाम

प्रिय मरीज़, आपको इस स्वास्थ्य सुविधा में ओपीडी सेवाएँ संतोषजनक मिली हैं। कृपया कुछ समय लें और इस प्रश्नावली को भरें। कृपया निम्नलिखित प्रश्नावली में प्रत्येक आइटम के साथ अपनी संतुष्टि दर्ज करें: यदि आपकी कोई राय नहीं है तो कृपया 9 लिखें

तालिका A: NIOPDSS के आइटम स्तर वर्णनात्मक आँकड़े

क्र.सं.	**धारा 1- व्यक्तिगत और सामाजिक जनसांख्यिकीय जानकारी**	
1.1	**आयु (पूरे वर्षों में)**	**_____ साल**
1.2	**लिंग**	**पुरुष/महिला/अन्य/ कहना पसंद नहीं करते**
1.3	**धर्म**	**□ हिन्दू** **□ ईसाई** **□ मुसलमान**

		□ अन्य (निर्दिष्ट करें _____ □ नहीं कहना पसंद करते हैं
1.4	जाति	□ सामान्य □ अन्य पिछड़ा वर्ग □ अनुसूचित जाति □ अनुसूचित जनजाति
1.5	आपने अब तक कितनी पढ़ाई की है?	□ कोई स्कूल की पढ़ाई नहीं की □ प्राइमरी स्कूल से कम पढ़ाई □ प्राइमरी स्कूल तक पढ़ाई □ मिडिल स्कूल तक पढ़ाई □ हाई स्कूल तक पढ़ाई □ डिग्री/डिप्लोमा/आईटीआई पूरी □ स्नातकोत्तर और उससे ऊपर
1 .6	आपकी शादीशुदा स्थिति क्या है (कृपया उचित उत्तर दर्ज करें)	□ अकेला □ विवाहित □ तलाकशुदा □ अलग किए □ विधवा
1.7	क)सामाजिक आर्थिक स्थिति	□ एपीएल □ गरीबी रेखा से नीचे
	ख) घर का प्रकार क्या है?	□ कच्चा □ अर्द्ध- पक्का □ पक्के
	सी) घर का मालिकाना हक	□ अपना □ किराये पर □ पट्टे पर

	पैमाने की वस्तु	बहुत सहमत	सहमत	निष्पक्ष	असहमत	बहुत असहमत
	स्वास्थ्य सुविधा का स्थान					
1	क्या आप आसानी से इस स्वास्थ्य केंद्र तक पहुँच सकते हैं	1	2	3	4	5
2	स्वास्थ्य सुविधा सुविधाजनक स्थान पर स्थित है	1	2	3	4	5
	प्रशासन					
3	काउंटर पर कतार लगी थी	1	2	3	4	5
4	महिलाओं/बुजुर्गों के लिए अलग कतार थी	1	2	3	4	5
5	"डॉक्टर से मिलने के लिए कम इंतज़ार करना पड़ा"?	1	2	3	4	5
	इंतज़ार क्षेत्र					
6	बैठने की जगह पर्याप्त थी और कुर्सियाँ आरामदायक थीं	1	2	3	4	5
7	पंखे और लाइट काम कर रहे हैं	1	2	3	4	5
	चिकित्सक पैरामीटर					
8	डॉक्टर ने समस्या को विस्तार से समझाने के लिए पर्याप्त समय दिया	1	2	3	4	5
9	डॉक्टर ने मरीज़ के साथ बहुत ही दोस्ताना और विनम्र तरीके से व्यवहार किया	1	2	3	4	5
10	डॉक्टर ने मुझे दवा की खुराक और समय के बारे में स्पष्ट सलाह दी	1	2	3	4	5
11	डॉक्टर मरीज़ की बात ध्यान से सुनता है	1	2	3	4	5
	फार्मेसी पैरामीटर					
12	फार्मेसी में दवाइयां उपलब्ध थीं	1	2	3	4	5
13	फार्मासिस्ट ने मुझे नुस्खा अच्छे तरीके से समझाया	1	2	3	4	5

14	दवाइयां बांटने में बहुत कम समय लगा	1	2	3	4	5
	मूलभूत सुविधाएँ और अन्य ज़रूरी चीज़ें"					
15	पीने के पानी की उचित व्यवस्था थी	1	2	3	4	5
16	"शौचालय साफ और ठीक थे, उपयोग करने लायक थे।"	1	2	3	4	5
17	कुल मिलाकर अस्पताल साफ था	1	2	3	4	5

ANNEXURE –V

Photos of Ayushman Arogya Mandir Jaunpur District, Uttar Pradesh






आयुष्मान
भव:

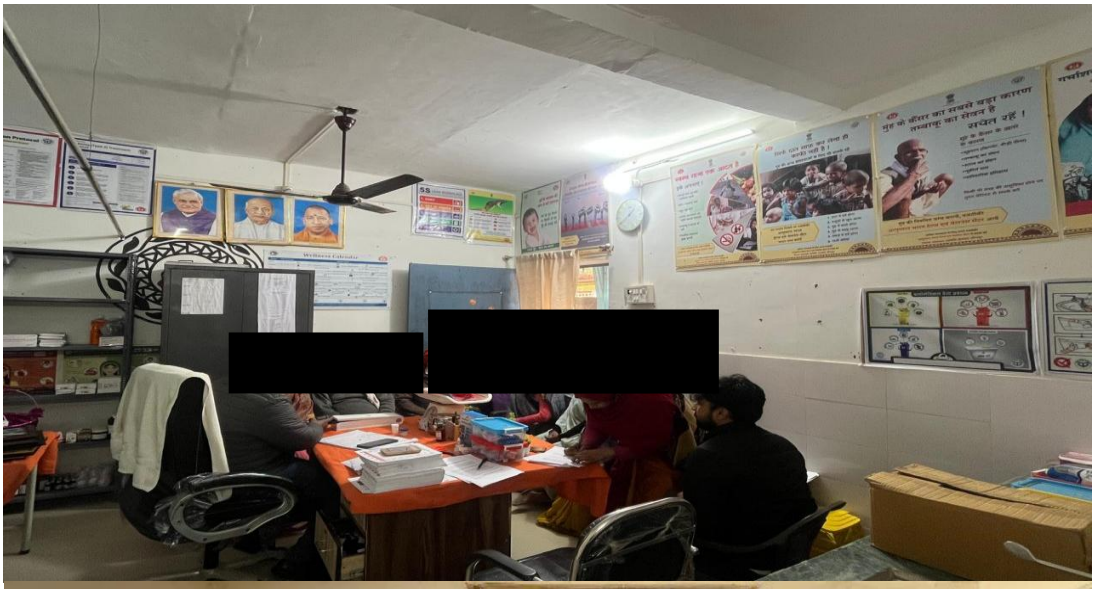





आयुष्मान आरोग्य मंदिर रतनपुर केराकत जौनपुर
"आरोग्यम परमम धनम"
आयुष्मान आरोग्य मंदिर
आयुष्मान आरोग्य मंदिर
रतनपुर केराकत जौनपुर "आरोग्यम परमम धनम"


APGAR


मलेरिया




NATIONAL RURAL HEALTH MISSION


डायग्नोस्टिक कार्नर
परिवार नियोजन


5 साल 7 बार
आयुष्मान भारत
उ.प्र.जन्म-मृत्यु पंजीकरण कार्यक्रम,जौनपुर
जीवन और पहचान दो, मेरे यह अधिकार दो।
शिशु के जन्म पर मंगल गाओ ,जन्म पंजीकरण तुरन्त कराओ।


ग्राम सचिवालय-पिलकिछा


रोकथाम हमेशा इलाज से बेहतर है !
अब बी.पी., मधुमेह और हृदय रोग की जांचों की विस्तृत जानकारी
मुझे कैंसर नहीं हो सकता
LUMINOUS



APPENDIX

Service Coverage for Hypertension and Diabetes Mellitus Among Males and Females at Ayushman Arogya Mandirs

Table 3.2.7 Hypertension & Diabetes Mellitus in Male

Variable	Overall, N =75 Mean± SD
Screening	--
Suspected & Referral	35.79±65.72
New Diagnosis	11.16±25.27
Cases on Treatment	8.44±11.38
Cases on Follow-up	8.53±11.07

Those diagnosed with both hypertension and diabetes mellitus—at Ayushman Arogya Mandir facilities reveals significant insights. On average, 35.79 (± 65.72) males were suspected and referred for both conditions, with 11.16 (± 25.27) newly diagnosed as having both hypertension and diabetes. Among them, 8.44 (± 11.38) were initiated on treatment, and 8.53 (± 11.07) remained on regular follow-up, indicating moderate but critical management of dual morbidity within primary care services.

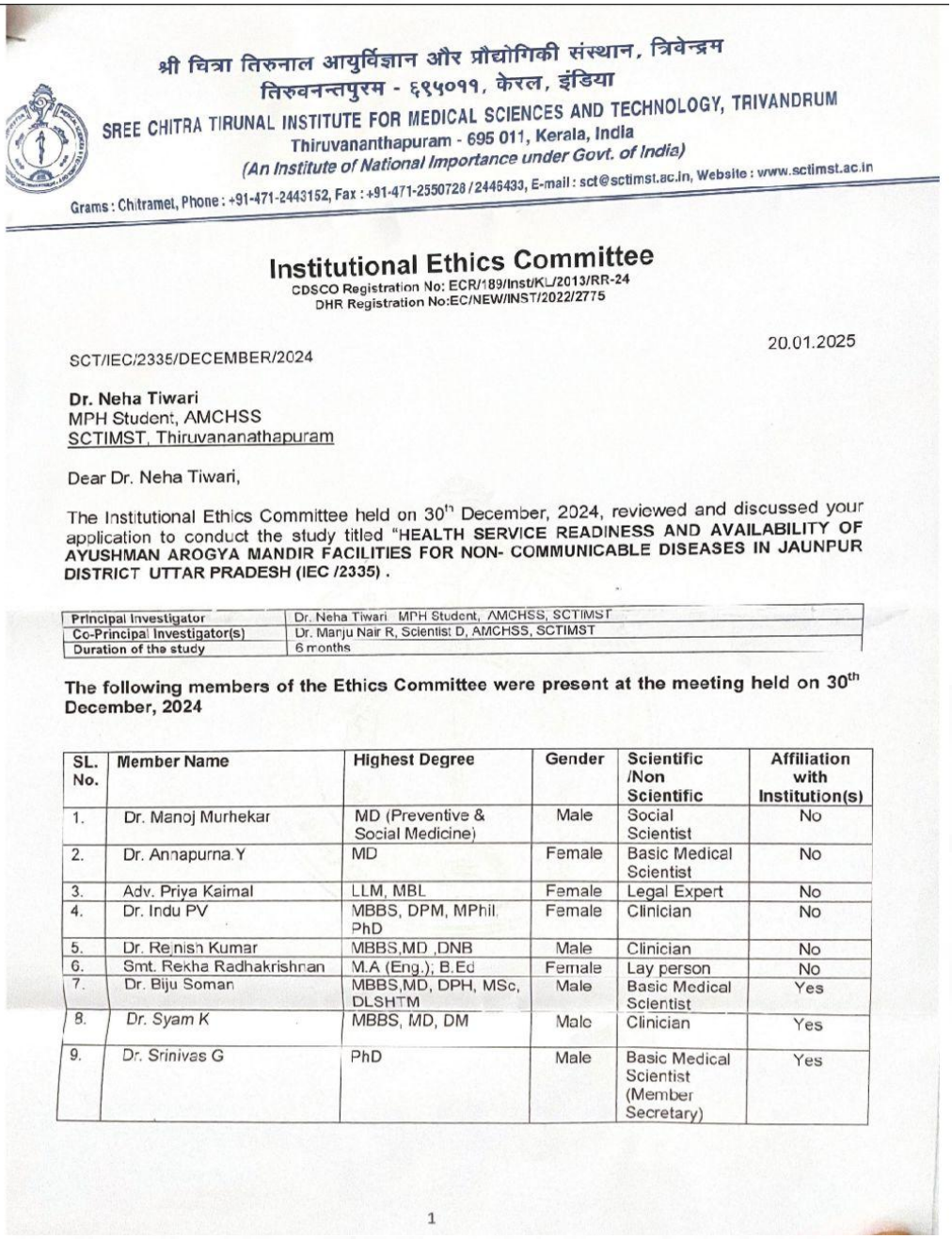
Table 3.2.8 Hypertension & Diabetes Mellitus in female

Variable	Overall, N =75 Mean± SD
Screening	--
Suspected & Referral	33.16±65.56
New Diagnosis	9.27±20.041
Cases on Treatment	8.53±11.97
Cases on Follow-up	7.49±10.37

Among females diagnosed with both hypertension and diabetes mellitus at Ayushman Arogya Mandir facilities, the average number of suspected and referred cases was 33.16 (± 65.56). Of these, 9.27 (± 20.04) were newly diagnosed with both conditions. On average, 8.53 (± 11.97) were initiated on treatment, and 7.49 (± 10.37) remained on follow-up. These figures reflect ongoing efforts to identify and manage dual morbidity among women, though continued emphasis on early detection and care continuity remains essential.

ANNEXURE-VI

IEC APPROVAL LETTER



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/2335/DECEMBER/2024

20.01.2025

Dr. Neha Tiwari
MPH Student, AMCHSS
SCTIMST, Thiruvananathapuram

Dear Dr. Neha Tiwari,

The Institutional Ethics Committee held on 30th December, 2024, reviewed and discussed your application to conduct the study titled "**HEALTH SERVICE READINESS AND AVAILABILITY OF AYUSHMAN AROGYA MANDIR FACILITIES FOR NON- COMMUNICABLE DISEASES IN JAUNPUR DISTRICT UTTAR PRADESH (IEC /2335)** .

Principal Investigator	Dr. Neha Tiwari MPH Student, AMCHSS, SCTIMST
Co-Principal Investigator(s)	Dr. Manju Nair R, Scientist D, 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

1

The following documents were reviewed:

Original submission

1. *IEC Application Form*
2. *Letters for permission*
3. *Funding details and Budget*
4. *Covering letter addressed to the Chairperson, IEC, SCTIMST dated 09.12.2024 forwarded by HOD*
5. *Interview schedule in English and Hindi*
6. *Informed Consent Forms in English and Hindi*
7. *Participant Information Sheets in English and Hindi*
8. *Permission letter*
9. *Checklist Form*
10. *Proposal*
11. *Declaration Form*
12. *CV of PI and Co-PI*

Revised submission

1. *Covering letter addressed to the Member Secretary, IEC, SCTIMST dated 10.01.2025 with response to IEC comments*
2. *IEC recommendation letter dated 09.01.2025*
3. *Proposal*
4. *Interview schedule in English and Hindi*
5. *Informed Consent Form in English and Hindi*
6. Participant Information Sheet in English and Hindi

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

SREE CHITRA TIRUNAL INSTITUTE FOR MEDICAL SCIENCES & TECHNOLOGY
INSTITUTIONAL ETHICS COMMITTEE (IEC)
SCTIMST
THIRUVANANTHAPURAM

ANNEXURE - VII

PERMISSION FROM HEALTH AUTHORITIES UTTAR PRADESH

राष्ट्रीय स्वास्थ्य मिशन, उ0प्र0
राज्य कार्यक्रम प्रबंधन इकाई
16,ए0पी0सेन रोड, लखनऊ

पत्रांकः188 / SPMU / NHM / Trg & Dev. / HR / 2023-24 / 5523 दिनांकः19.11.2024

सेवा में,

डा0 नेहा तिवारी
छात्रा एम0पी0एच0
श्री चित्रा तिरूनाल आयुर्विज्ञान और प्रौद्योगिकी संस्थान,
त्रिवेन्द्रम तिरूवनन्तपुरम् केरल

महोदया

कृपया डा0 बिजू सोमन, प्रोफेसर एण्ड हेड, श्री चित्रा तिरूनाल आयुर्विज्ञान और प्रौद्योगिकी संस्थान, त्रिवेन्द्रम तिरूवनन्तपुरम् केरल इंडिया के पत्र संख्या AMCHSS /MPH2023/ External Letter/71/2024, दिनांक 12.11.2024 का संदर्भ ग्रहण करने का कष्ट करें जिसके कम में आपको जनपद जौनपुर उत्तर प्रदेश स्थित आयुष्मान आरोग्य मंदिर (ग्रामीण) में "Health Service Readiness and Availability of Ayushman Arogya mandir facilities for Non-Communicable Diseases in Jaunpur district Uttar Pradesh." विषय पर अध्ययन हेतु अनुमति प्रदान की जाती है।

उक्त के कम में आपको निर्देशित किया जाता है मुख्य चिकित्साधिकारी जनपद जौनपुर, उत्तर प्रदेश से सम्पर्क स्थापित कर अपना अध्ययन कार्य सुचारू रूप से सम्पन्न करना सुनिश्चित करें।

(धीरेन्द्र सिंह सचान)
अपर मिशन निदेशक

प्रतिलिपिः–

1. मिशन निदेशक महोदया को सूचनार्थ प्रेषित।
2. जिलाधिकारी/अध्यक्ष जिला स्वास्थ्य समिति जनपद जौनपुर को सूचनार्थ प्रेषित।
3. मुख्य चिकित्साधिकारी जनपद जौनपुर को इस निर्देश के साथ कि सुश्री नेहा तिवारी को अध्ययन हेतु सहयोग प्रदान करना सुनिश्चित करें।
4. डा0 बिजू सोमन, प्रोफेसर एण्ड हेड श्री चित्रा तिरूनाल आयुर्विज्ञान और प्रौद्योगिकी संस्थान, त्रिवेन्द्रम तिरूवनन्तपुरम् केरल इंडिया को पत्र के कम में इस आशय से प्रेषित कि कृपया अपने स्तर से सुश्री नेहा तिवारी को अवगत कराने का कष्ट करें।
5. जिला कार्यक्रम प्रबंधक को इस निर्देश के साथ कि समस्त आवश्यक सहयोग प्रदान करना सुनिश्चित करें।
6. एच0आर0नोडल जनपद जौनपुर को आवश्यक कार्यवाही हेतु।

(सुधा यादव)
महाप्रबंधक(मानव संसाधन)

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ANNEXURE - VIII

PLAGIARISM REPORT

HEALTH SERVICE READINESS AND AVAILABILITY OF AY...

By: Neha Tiwari

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HEALTH SERVICE READINESS AND AVAILABILITY OF AYUSHMAN AROGYA MANDIR FACILITIES FOR NON-COMMUNICABLE DISEASES IN JAUNPUR DISTRICT, UTTAR PRADESH ABSTRACT Background: The

Ayushman Bharat Health and Wellness Centres , launched by the Government of India 2

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Shah, Bhumit Anishkumar. "A Study on Measuring the Perception for Selected Health Care Services Provided by Primary Health Care Centers (PHCs) in Selected Villages of the Vadodara District", Maharaja Sayajirao University of Baroda (India), 2024

8 48 words / < 1% match - Publications
Salah Hassan, Kidd Michael. "Family Practice In The Eastern Mediterranean Region - Universal Health Coverage And Quality Primary Care", CRC Press, 2018

9 46 words / < 1% match - Crossref
Thomas Hinneh, Bernard Mensah, Hosea Boakye, Oluwabunmi Ogungbe, Yvonne Commodore-Mensah. "Health Services Availability and Readiness for Management of Hypertension and Diabetes in Primary Care Health Facilities in Ghana: a Cardiovascular Risk Management project", Global Heart, 2024

10 44 words / < 1% match - Publications
Mohan Rao, Balveer Arora. "Public Health and Federalism in India - Dissonant Discourses", Routledge, 2026

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www.newsroomodisha.com

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Lien Luu, Jonquil Lowe, Jason Butler. "Essential Personal Finance - A Practical Guide for Students", Routledge, 2025

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Hannah C. Karpel, Amani Sampson, Mia Charifson, Lydia A. Fein et al. "Assessing Medical Students' Attitudes and Knowledge Regarding LGBTQ Health Needs Across the United States", Journal of Primary Care & Community Health, 2023

19 29 words / < 1% match - Crossref
S. Mendis, Iqbal Al Bashir, Lanka Dissanayake, Cherian Varghese et al. "Gaps in Capacity in Primary Care in Low-Resource Settings for Implementation of Essential Noncommunicable Disease Interventions", International Journal of Hypertension, 2012

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Aritrik Das, Yukti Bhandari, Suraj P. Singh, Priyanka Sharma et al. "Satisfaction among patients seeking services at an urban health training center during the COVID-19 pandemic in South Delhi, India", Journal of Family Medicine and Primary Care

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