



Original Research Article

EVALUATION OF HEALTH AND WELLNESS CENTRES (AYUSHMAN AROGYA MANDIR) UNDER AYUSHMAN BHARAT MISSION IN MANIPUR, NORTH-EAST INDIA: A CROSS-SECTIONAL STUDY

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ABSTRACT

Background: Ayushman Arogya Mandirs/Health and Wellness Centres (HWCs) were established under the Ayushman Bharat Mission to provide comprehensive primary healthcare with emphasis on health promotion, lifestyle modification, and prevention of non-communicable diseases (NCDs). **Objectives:** To assess the input and process components of HWCs in Imphal East and Imphal West districts of Manipur and evaluate the utilization of NCD services among beneficiaries.

Materials and Methods: A community-based cross-sectional study was conducted in 18 randomly selected HWCs in Imphal East and Imphal West districts, Manipur, using the JHPIEGO Supportive Supervision Checklist. Utilization of NCD services was assessed among 635 beneficiaries aged ≥ 30 years using a semi-structured questionnaire. Data were analysed using descriptive statistics and logistic regression analysis, with a p-value < 0.05 considered statistically significant.

Results: Basic infrastructure and external branding were available in all HWCs, while dedicated wellness spaces were available in 66.7% of centres. Availability of diagnostic facilities, teleconsultation services, selected NCD drugs, and several expanded healthcare services was suboptimal. Among the 635 participants, 67.6% reported a family history of NCDs, 32.9% had hypertension, and 35.1% had diabetes mellitus. Overall, 68.0% had visited an HWC during the preceding year. Utilization of NCD services was significantly associated with older age, female gender, widowhood/separation, higher educational attainment, lower monthly family income, and a family history of NCDs.

Conclusions: Although the basic infrastructure of HWCs was largely adequate, important gaps remained in diagnostic facilities, teleconsultation, availability of selected medicines, and delivery of expanded healthcare services. Strengthening service availability and increasing community awareness may improve the utilization of NCD services at HWCs.

Keywords: Ayushman Bharat, Health and Wellness Centres, Non-Communicable Diseases, Primary Healthcare, Health Services Utilization.

INTRODUCTION

Universal Health Coverage (UHC) remains a major public health priority in India amid global concerns regarding limited access to healthcare, inadequate availability, suboptimal quality of health services,

and high out-of-pocket expenditure. Ayushman Bharat: Pradhan Mantri Jan Arogya Yojana (AB-PMJAY) is one of the world's largest government-funded healthcare programmes, launched to provide equitable, accessible, affordable, and quality healthcare services to the population. The

programme was launched in September 2018 by the Ministry of Health and Family Welfare (MoHFW), Government of India, as envisaged in the National Health Policy 2017.^[1,2]

Ayushman Bharat aims to achieve Universal Health Coverage through two complementary components: Ayushman Bharat Health and Wellness Centres (AB-HWCs), now designated as Ayushman Arogya Mandirs (AAMs), and the Pradhan Mantri Jan Arogya Yojana (PM-JAY). This initiative envisages the delivery of Comprehensive Primary Health Care (CPHC) by bringing essential healthcare services closer to communities with an emphasis on universality, equity, health promotion, wellness, and prevention of non-communicable diseases through lifestyle modifications, including yoga and physical activity. In contrast, PM-JAY provides financial protection for secondary and tertiary healthcare to nearly 40% of India's economically vulnerable population. In Manipur, the Chief Minister-gi Hakshelgi Tengbang (CMHT) scheme complements PM-JAY by providing cashless healthcare coverage of up to ₹5 lakh annually for eligible beneficiaries at empanelled hospitals within Manipur and selected centres in Guwahati.^[1-4]

In February 2018, the Government of India announced the establishment of 150,000 Health and Wellness Centres by transforming existing Primary Health Sub-Centres (PHSCs) and Primary Health Centres (PHCs) under the Ayushman Bharat Mission.^[5-8] The first HWC was inaugurated at Bijapur, Chhattisgarh, on 18 April 2018. During the first year of implementation, more than 17,000 HWCs became operational, surpassing the target of 15,000 centres for the financial year 2018–2019.^[9,10] In Manipur, the first HWC was inaugurated on 11 August 2018 at PHSC Awang Wabagai in Imphal West district. By 2022, the state had successfully operationalized all 420 targeted HWCs, comprising 320 PHSCs, 91 PHCs, and 9 Urban Primary Health Centres (UPHCs).^[4,11,12]

Although the Ayushman Bharat programme has expanded rapidly across Manipur, evidence regarding the functioning and performance of Health and Wellness Centres in the state remains limited. To the best of our knowledge, no comprehensive evaluation has been conducted to assess their functioning under the Ayushman Bharat Mission. Therefore, the present study was undertaken to evaluate the input and process components of HWCs and assess the utilization of non-communicable disease (NCD) services among beneficiaries in Imphal East and Imphal West districts of Manipur.

MATERIALS AND METHODS

Study design, setting and participants: A community-based cross-sectional study was conducted in the Imphal East and Imphal West districts of Manipur from June 2024 to May 2025.

These were among the first districts in the state where Health and Wellness Centres (HWCs) under the Ayushman Bharat Mission were operationalized. By 2022, the Government of Manipur had successfully operationalized all 420 targeted HWCs, comprising 320 Primary Health Sub-Centres (PHSCs), 91 Primary Health Centres (PHCs), and 9 Urban Primary Health Centres (UPHCs), in accordance with the Government of India targets. The study evaluated the functioning of HWCs and assessed the utilization of non-communicable disease (NCD) services among beneficiaries aged ≥30 years who had been residing in the study area for at least one year. Individuals who were unwilling to participate or could not be contacted after two household visits were excluded from the study.

Sampling technique and sample size: Among the operational HWCs in the study districts, 50% of the centres from each district were selected using simple random sampling. Accordingly, 10 of the 20 HWCs in Imphal West and 8 of the 16 HWCs in Imphal East were included, resulting in a total of 18 HWCs. For assessment of NCD service utilization, the sample size was calculated assuming a prevalence of 50%, a 95% confidence level, a 5% absolute precision, a design effect of 1.5, and a 10% allowance for non-response, yielding a final sample size of 635 participants. The sample was distributed equally across the 18 selected HWCs. One village under the catchment area of each HWC was selected by simple random sampling (lottery method). From each selected village, 35–36 eligible beneficiaries were recruited through systematic household sampling, beginning from a randomly selected household. Where more than one eligible participant was available in a household, one participant was selected by lottery.

Study tools: A structured Supportive Supervision Checklist for Health and Wellness Centres, adapted from the JHPIEGO Supportive Supervision Checklist, was used to assess the input and process components of the selected HWCs.^[4] The checklist comprised the following domains:

- General information and identification of the HWC
- Physical infrastructure
- Human resources and training
- Logistics, including drugs and expanded range of services
- Diagnostic facilities
- Information technology (IT) services
- Wellness activities
- Information, education and communication (IEC) materials
- Other functional components
- Additional observations

A semi-structured questionnaire, adapted from the operational guidelines for Ayushman Bharat Health and Wellness Centres, was used to assess utilization of the NCD component of the programme among beneficiaries.^[10] The questionnaire included

information on socio-demographic characteristics, family history of NCDs, utilization of NCD services at HWCs, and awareness regarding the PM-JAY and Chief Minister-gi Hakshelgi Tengbang (CMHT) schemes.

Data collection procedure: The input and process components of the selected HWCs were assessed through direct observation and interviews with healthcare personnel using the structured checklist. Each facility assessment required approximately 60–90 minutes. Information on utilization of NCD services was collected through face-to-face interviews with eligible beneficiaries using the semi-structured questionnaire after obtaining verbal informed consent. Each interview lasted approximately 30–40 minutes.

Data analysis: The collected data were entered into Microsoft Excel, checked for completeness and consistency, and analysed using IBM SPSS Statistics version 22. Descriptive statistics, including mean, standard deviation, frequency, and percentage, were used to summarise the data. Associations between socio-demographic variables and utilization of NCD services were assessed using the Chi-square test, followed by univariate and multivariable logistic regression analyses. Adjusted odds ratios (AORs) with 95% confidence intervals (CIs) were calculated. A p-value of <0.05 was considered statistically significant.

Ethical considerations: Participants were informed about the objectives of the study, and participation was entirely voluntary. Verbal informed consent was obtained from all participants prior to data collection, and confidentiality and anonymity were maintained throughout the study. Ethical approval was obtained from the Institutional Ethics Committee (Protocol No. 248/17/PGT-2020).

RESULTS

Section A: Evaluation of Health and Wellness Centres

A total of 18 Health and Wellness Centres (HWCs) were evaluated, comprising nine Sub Health Centre-HWCs (SHC-HWCs), seven Primary Health Centre-HWCs (PHC-HWCs), and two Urban Primary Health Centre-HWCs (UPHC-HWCs). Assessment of physical infrastructure showed that all HWCs had outpatient consultation rooms, storage facilities for documents, health cards and registers, staff toilets, biomedical waste management systems, and external branding in accordance with programme guidelines. Of the 16 HWCs with delivery points, two Type-A SHC-HWCs were not applicable for labour room assessment. Dedicated space for wellness activities, including yoga, was available in 12 (66.7%) HWCs. [Table 1]

Table 1: Availability of Physical Infrastructure in the AB-HWC (N=18)

Physical Infrastructure	Available, N(%)
OPD room	18 (100)
Space for laboratory/ diagnostics services	14 (77.8)
Space for pharmacy/ medicine dispensation	14 (77.8)
Space/ room identified for Wellness activities including Yoga sessions	12 (66.7)
**Labour room at delivery points (N=16)	14 (87.5)
Waiting area with seating arrangements for 15-20 beneficiaries	17 (94.4)
Separate functional toilets for males and Females	13 (72.2)
Separate functional toilets for staff	18 (100)
Facilities for people with disabilities (ramps at entry, wheel chairs etc.)	16 (88.9)
Storage space for documents, health cards and registers	18 (100)
Residential space for all service providers	06 (33.3)
Electric supply	14 (77.8)
Power back up	08 (44.4)
Water supply	11 (61.1)
Proper system for drainage	14 (77.8)
Provision of BMW management	18 (100)
External branding as per guidelines	18 (100)

**Type -B Sub-health Centres and Higher

The training status of healthcare providers is presented in Table 2. All Community Health Officers (CHOs) (9, 100%) and 37 (67.2%) Auxiliary Nurse Midwives (ANMs) had received training in non-communicable disease (NCD) care and management. All CHOs and 26 (60.4%) staff nurses had also received training in Visual

Inspection with Acetic Acid (VIA) for cervical cancer screening. With respect to information technology (IT), all CHOs (100%) were trained in the use of digital platforms, including the ANMOL application, followed by Multipurpose Workers (MPWs) (13, 61.9%), staff nurses (26, 60.4%), and ANMs (33, 60.0%).

Table 2: Training status for various Service providers on Non Communicable Disease (NCD), Visual Inspection under Acetic Acid (VIA), Information Communication Technology (ICT)

Type of training	Health-Care Provider	Training Status		Total
		Yes N (%)	No N (%)	
NCD	Medical Officer (MO)	19(48.7)	20(51.2)	39

	MO AYUSH	07(53.8)	06(46.2)	13
	Staff Nurse	26(60.4)	17(39.6)	43
	Community Health Officer	09(100)	00(0)	09
	ANM	37(67.2)	18(32.8)	55
	MPW male	16(76.1)	05(23.9)	21
	ASHA	113(48.9)	118(51.1)	231
Visual Inspection under Acetic Acid (VIA)	Medical Officer (MO)	22(56.4)	17(43.6)	39
	MO AYUSH	06(46.1)	07(53.9)	13
	Staff Nurse	26(60.4)	17(39.6)	43
	Community Health Officer	09(100)	00(0)	09
Information Communication Technology (ICT)	Medical Officer (MO)	16(41.0)	23(58.9)	39
	MO AYUSH	07(53.8)	06(46.1)	13
	Staff Nurse	26(60.4)	17(39.5)	43
	Pharmacist	08(53.3)	07(46.6)	15
	Lab Technician	05(45.6)	06(54.5)	11
	Community Health Officer	09(100)	00(0)	09
	ANM	33(60.0)	22(40.0)	55
	MPW male	13(61.9)	08(38.0)	21
	ASHA	43(18.6)	188(81.3)	231

Essential drugs were available in 15 (83.3%) HWCs. Anti-hypertensive and anti-diabetic medications were available in all centres, whereas anti-epileptic drugs were available in six (33.3%) HWCs. Drugs for the management of other NCDs, including mental illnesses and chronic respiratory diseases such as asthma, allergic rhinitis, and chronic

obstructive pulmonary disease (COPD), were available in five (27.8%) HWCs. All centres provided screening services for hypertension and diabetes, geriatric and palliative care, and basic trauma and emergency care. The availability of diagnostic facilities and expanded healthcare services is presented in Table 3.

Table 3: Showing the availability of diagnostic facilities, NCD drugs and Expanded range of services in the HWC (N=18)

Service type	Available, N(%)
A) Availability of diagnostic facilities	
Haemoglobin test	17(94.4)
*TLC, DLC, ESR (N=9)	05(55.5)
Blood grouping test	15(83.3)
Urine pregnancy rapid test	18(100)
Urine dipstick test	11(61.1)
Blood glucose test	17(94.4)
*HbA1C (N=9)	01(11.1)
Malaria Smear test	09(50.0)
Rapid syphilis test	06(33.3)
HIV serology: rapid test	07(38.9)
Typhoid serology (N=9)	03(33.3)
Hepatitis testing HBsAg (N=9)	05(55.5)
TB Microscopy- AFB smear (N=9)	04(44.4)
TB sputum collection	05(27.8)
Liver Function Test (N=9)	07(77.7)
Blood Urea, Creatinine (N=9)	07(77.7)
Lipid profile (N=9)	05(55.5)
Rapid diagnostic test for chikungunya, dengue, filariasis, kala-azar	00(0)
Rapid diagnostic test for malaria	07(38.9)
B) Availability of NCD Drugs	
• Anti-Hypertensive drugs	18(100)
• Anti-diabetic drugs	18(100)
• Anti-epileptic drugs	06(33.3)
• Other drugs for NCD	05(27.8)
C) Availability Expanded range of services	
• Screening for hypertension	18(100)
• Screening for diabetes	18(100)
• Care for common ophthalmic problems	06(33.3)
• Care for common ENT problems	03(16.7)
• Basic dental care	07(38.9)
• Geriatric and palliative services	18(100)
• Basic trauma care and emergency services	18(100)

Regarding information technology and wellness activities, internet connectivity was available in 14 (77.8%) HWCs, while teleconsultation services and teleconsultation hub linkages were available in 11 (61.1%) centres. Nine (50.0%) HWCs had yoga

instructors and yoga equipment; however, only eight (44.4%) conducted regular scheduled yoga sessions. Details of IT services, wellness activities, IEC materials, and other functional components are presented in Table 4.

Table 4: Showing the availability of Information Technology (IT) services, Wellness activities, Information Education & Communication (IEC) services and Other areas of functionality undertaken in the HWC (N=18)

Service type	Available, N(%)
A) IT-services	
• Internet connectivity	14(77.8)
• Tele-consultation service	11(61.1)
• Tele-consultation hub linked	11(61.1)
B) Wellness related arrangements/activities	
• Yoga instructor	09(50)
• Yoga schedule	07(38.9)
• Yoga equipment	09(50)
• Yoga activities	08(44.4)
C) Information, education & communication (IEC) material	
• Display of signages and name of the facility	08(44.4)
• Display of IEC material at HWC	11(61.1)
• Installation of LED screen in the waiting area for IEC display	02(11.1)
• Display of standard protocols at HWCs	17(94.4)
• Display of citizen charter	18(100)
• Display of contact details of the HWCs team	13(72.2)
• Fixed day services schedule developed and displayed	16(88.9)
• Information on grievance redressal displayed	17(94.4)
• Information on referral transport displayed	16(88.9)
• Information on nearest referral facility displayed	16(88.9)
D) Area of functionality	Performance Status or Undertaken
	N(%)
Population enumeration as per revised CBAC format	
• Not yet initiated	02(11.1)
• Under process	08(44.4)
• Completed	08(44.4)
Linkages with School Health Program	18(100)
Meetings with VHSNCs/ MAS	18(100)
Outreach sessions being conducted	18(100)

Section B: Assessment of Utilization of NCD Services among Beneficiaries

A total of 635 beneficiaries aged 30–88 years were included in the study. The mean age of the participants was 53.29 ±14.4 years, with a median age of 53 years (Table 5). Monthly family income

ranged from Rs. 5,000 to Rs. 300,000, with a median monthly income of Rs. 35,000. The distance between participants' residences and the nearest HWC ranged from 16 to 2,500 metres (median: 150 metres).

Table 5: Showing the Socio-Demographic Characteristics of the respondents (N=635)

Characteristics	Frequency	Percentage
Age in years		
30-39	140	22.0
40-49	121	19.1
50-59	135	21.3
>60	239	37.6
Gender		
Male	272	43.0
Female	363	57.0
Religion		
Hindu	459	72.3
Christian	67	10.6
Islam	46	07.2
Others	63	09.9
Marital status		
Married	524	82.5
Unmarried	59	09.3
Widowed/separated	52	08.2
Education		
Graduate & above	256	40.3
Up-to 12 th	139	21.9
Up-to 10 th	99	15.6
Middle school	19	03.0
Illiterate	122	19.2
Income (Rs)		
<25000	205	32.3
25000-49000	268	42.2
>50000	162	25.5

Family history of NCD		
Yes	429	67.6
No	206	32.4

Overall, 430 (68.0%) participants had visited an HWC during the preceding year. Among these, 206 (47.9%) visited for NCD follow-up services, 204 (47.4%) for routine outpatient consultations, laboratory investigations, and vaccination services, 16 (3.7%) for family planning services or medical certification, and 4 (0.9%) for trauma and emergency care.

Among the 635 participants, 408 (64.3%) had undergone blood pressure measurement at HWCs, of whom 172 were diagnosed with hypertension. An additional 37 participants who had not undergone blood pressure measurement at HWCs were diagnosed with hypertension at other healthcare facilities, resulting in a total of 209 hypertensive participants. Among these, 168 (80.3%) received anti-hypertensive medications from HWCs. The frequency of medication receipt ranged from 2 to 12 times annually, with a median of five visits per year. Similarly, 345 (54.3%) participants underwent blood glucose testing at HWCs, and 162 were diagnosed with diabetes mellitus. An additional 61 participants were diagnosed with diabetes at other healthcare facilities, resulting in a total of 223 diabetic participants. Among these, 131 (58.7%) received anti-diabetic medications from HWCs, with the frequency of medication receipt ranging from three to six times annually (median: four visits per year). Screening services for oral, breast, and cervical cancers were available at HWCs. Overall, 227 (35.7%) participants underwent oral cancer screening. Among the 363 female participants, 129 (35.5%) underwent breast cancer screening and 83 (22.8%) underwent cervical cancer screening. No cases of oral, breast, or cervical cancer were diagnosed at HWCs during the study period.

Seventy (11.0%) participants utilized mental health services at HWCs, with the frequency of visits ranging from two to twelve annually (median: five visits). No participants were diagnosed with or treated for epilepsy or chronic obstructive pulmonary disease (COPD) at the HWCs. However, 16 (2.5%) participants reported receiving treatment for COPD at other healthcare facilities.

The associations between socio-demographic characteristics and utilization of NCD screening services are presented in Tables 6–8. Univariate and multivariable logistic regression analyses demonstrated that increasing age and a family history of NCDs were significantly associated with greater utilization of hypertension, diabetes, and oral cancer screening services ($p < 0.001$).

For blood pressure screening, significantly higher utilization was observed among females (AOR: 3.43; 95% CI: 1.97–5.97), widowed/separated participants (AOR: 8.72; 95% CI: 1.73–43.81), and participants with graduate-level education or above (AOR: 9.71; 95% CI: 3.30–28.54). For blood glucose screening, females (AOR: 7.48; 95% CI: 4.02–13.92), widowed/separated participants (AOR: 3.63; 95% CI: 1.10–12.00), and participants educated up to Class 12 (AOR: 21.30; 95% CI: 7.89–57.45) demonstrated significantly higher utilization. Oral cancer screening utilization was significantly higher among females (AOR: 1.85; 95% CI: 1.07–3.21) and participants educated up to Class 12 (AOR: 4.74; 95% CI: 2.14–10.48). Participants with a monthly family income of <Rs. 25,000 were also more likely to utilize NCD screening services than those with higher incomes.

Table 6: Showing Logistic regression analysis with ever getting blood pressure measured in the HWCs by respondents as dependent variables and selected independent variables

Characteristics	Categories	Crude OR (95% CI)	P value	Adjusted OR (95% CI)	P value
Age (Years)	30-39				
	40-49	2.45 (1.47-4.05)	0.001	2.52 (1.20-5.28)	0.14
	50-59	3.48 (2.11-5.72)	0.001	3.42 (1.59-7.32)	0.002
	>60	21.52 (12.2-37.87)	0.001	20.11 (7.79-51.91)	0.001
Gender	Male				
	Female	1.78 (1.28-2.48)	0.001	3.43 (1.97-5.97)	0.001
Religion	Hindu				
	Christian	0.49 (0.29-0.83)	0.008	1.08 (0.51-2.30)	0.820
	Islam	1.83 (0.88-3.79)	0.101	2.41 (0.95-6.14)	0.060
	Others	0.63 (0.37-1.08)	0.098	0.80 (0.39-1.65)	0.550
Marital status	Married				
	Unmarried	0.36 (0.20-0.62)	0.001	1.20 (0.51-2.79)	0.670
	Widowed/separated	14.10 (3.39-58.61)	0.001	8.72 (1.73-43.81)	0.009
Education	Illiterate	0.69 (0.20-2.31)			
	Middle school	0.28 (0.15-0.53)	0.549	3.13 (0.73-13.31)	0.122
	Up-to Class10	1.03 (0.52-2.03)	0.001	3.02 (1.18-7.72)	0.021
	Up-to Class12	0.14 (0.08-0.24)	0.917	20.21 (7.08-57.68)	0.001
	Graduate & above		0.001	9.71 (3.30-28.54)	0.001
Income (Rs)	<25000				
	25000-49000	0.21 (0.13-0.21)	0.001	0.24 (0.12-0.47)	0.001

	>50000	0.12(0.07-0.21)	0.001	0.09 (0.04-0.22)	0.001
Family history of NCD	Absent				
	Present	8.03(5.53-11.68)	0.001	4.68 (2.77-7.89)	0.001

Table 7: Showing logistic regression analysis with getting blood sugar level measured in the HWCs by respondents as dependent variables and selected independent variables

Characteristics	Categories	Crude OR (95% CI)	P value	Adjusted OR (95% CI)	P value
Age (Years)	30-39				
	40-49	11.96 (5.73-24.97)	0.001	22.33 (7.87-63.37)	0.001
	50-59	17.25(8.33-35.73)	0.001	33.92 (11.57-99.42)	0.001
	>60	66.66 (32.16-138.19)	0.001	138.69(41.24-466.3)	0.001
Gender	Male				
	Female	2.12 (1.54-2.92)	0.001	7.48 (4.02-13.92)	0.001
Religion	Hindu				
	Christian	0.49 (0.29-0.84)	0.009	0.62 (0.26-1.44)	0.27
	Islam	1.62 (0.85-3.09)	0.13	1.99 (0.81-4.87)	0.12
	Others	0.76 (0.44-1.29)	0.31	0.84 (0.38-1.85)	0.67
Marital status	Married				
	Unmarried	0.07 (0.02-0.18)	0.001	0.72 (0.19-2.69)	0.63
	Widowed/separated	7.41 (2.90-18.93)	0.001	3.63 (1.10-12.00)	0.03
Education	Illiterate				
	Middle school	0.33 (0.12-0.92)	0.35	1.03 (0.31-3.42)	0.95
	Up-to Class 10	0.22 (0.12-0.40)	0.001	1.41 (0.62-3.18)	0.40
	Up-to Class 12	0.78 (0.43-1.42)	0.42	21.30 (7.89-57.45)	0.001
	Graduate & above	0.11 (0.07-0.19)	0.001	6.57 (2.26-19.10)	0.001
Income (Rs)	<25000				
	25000-49000	0.33 (0.22-0.49)	0.001	0.60 (0.32-1.13)	0.11
	>50000	0.21 (0.13-0.33)	0.001	0.31 (0.14-0.70)	0.005
Family history of NCD	Absent				
	Present	6.38 (4.38-9.27)	0.001	2.80 (1.58-4.96)	0.001

Table 8: Showing logistic regression analysis with getting screened for oral cancer in the HWCs by respondents as dependent variables and selected independent variables

Characteristics	Categories	Crude OR (95% CI)	P value	Adjusted OR (95% CI)	P value
Age (Years)	30-39				
	40-49	3.05 (1.34-6.96)	0.008	2.41 (0.82-7.05)	0.10
	50-59	9.40 (4.40-20.08)	0.001	7.20 (2.48-20.84)	0.001
	>60	22.06 (10.70-45.48)	0.001	22.08(7.18-67.92)	0.001
Gender	Male				
	Female	1.00 (0.72-1.39)	0.969	1.85 (1.07-3.21)	0.027
Religion	Hindu				
	Christian	0.43 (0.23-0.78)	0.006	0.75 (0.32-1.72)	0.50
	Islam	0.58 (0.30-1.14)	0.12	0.74 (0.33-1.67)	0.47
	Others	0.46 (0.25-0.85)	0.014	0.62 (0.28-1.39)	0.25
Marital status	Married				
	Unmarried	0.17 (0.07-0.40)	0.001	1.12 (0.32-3.94)	0.84
	Widowed/separated	0.50 (0.26-0.97)	0.041	0.17 (0.08-0.38)	0.001
Education	Illiterate				
	Middle school	0.33 (0.11-0.98)	0.04	0.48 (0.14-1.60)	0.23
	Up-to Class 10	0.49 (0.28-0.84)	0.01	2.65 (1.23-5.78)	0.01
	Up-to Class 12	0.95 (0.58-1.54)	0.83	4.74 (2.14-10.48)	0.001
	Graduate & above	0.25 (0.16-0.40)	0.001	5.24 (1.93-14.18)	0.001
Income (Rs)	<25000				
	25000-49000	0.29 (0.19-0.43)	0.001	0.24 (0.13-0.44)	0.001
	>50000	0.24 (0.15-0.39)	0.001	0.13 (0.06-0.28)	0.001
Family history of NCD	Absent				
	Present	17.97 (9.51-33.96)	0.001	7.36 (3.57-15.16)	0.001

DISCUSSION

The Ayushman Bharat Health and Wellness Centre (HWC) programme aims to strengthen primary healthcare by improving service delivery, human

resources, infrastructure, financing, information and communication technology (ICT), community participation, management of non-communicable diseases (NCDs), and referral systems.^[13-15] Continuous monitoring and periodic evaluation are

essential to ensure effective implementation and identify gaps requiring corrective action. As the programme continues to expand in Manipur, assessing the functioning of HWCs and factors influencing service utilization is crucial for strengthening primary healthcare delivery.

Sumant et al,^[16] emphasized that successful implementation of HWCs depends not only on increasing the number of centres but also on developing a well-trained and competent workforce. Similarly, Brar et al,^[17] reported adequate availability of Community Health Officers (CHOs) and other healthcare personnel in Punjab, whereas Bashar et al,^[18] documented substantial shortages of multipurpose health workers in sub-centres. In the present study, all CHOs were trained in NCD management, cancer screening, and information technology; however, training gaps were observed among medical officers, Auxiliary Nurse Midwives (ANMs), Accredited Social Health Activists (ASHAs), staff nurses, and other healthcare workers. Similar observations have been reported by Sood et al,^[19] The observed training gaps may reflect delays in programme implementation and interruptions in capacity-building activities during the COVID-19 pandemic. These findings underscore the need for regular refresher training and continuous capacity building to ensure effective delivery of comprehensive primary healthcare services.

Although the overall physical infrastructure of the evaluated HWCs was satisfactory, deficiencies were identified in residential accommodation, power backup, water supply, and dedicated wellness spaces. Similar infrastructural shortcomings have been reported by Reddy et al,^[22] who observed that several HWCs in Andhra Pradesh were functioning without designated government buildings.

Availability of essential medicines and expanded healthcare services remains an important determinant of programme effectiveness. In the present study, essential medicines were available in 83.3% of HWCs. While anti-hypertensive and anti-diabetic medicines were available in all centres, anti-epileptic drugs and medicines for mental illnesses and chronic respiratory diseases such as asthma, allergic rhinitis, and chronic obstructive pulmonary disease (COPD) were available in only 33.3% and 27.8% of HWCs, respectively. Similar gaps in the availability of medicines for expanded primary healthcare services have been reported in previous studies.^[21,22] All evaluated HWCs provided screening services for hypertension and diabetes, geriatric and palliative care, and basic trauma and emergency services.

Among beneficiaries who visited HWCs during the preceding year, nearly half (47.9%) utilized the centres for follow-up care of NCDs, while 47.4% sought routine outpatient consultations, laboratory investigations, and vaccination services. Smaller proportions visited for family planning services and medical certification (3.7%) or trauma and

emergency care (0.9%). Screening for hypertension, diabetes, and oral cancer was significantly associated with increasing age and a family history of NCDs. Female participants, widowed or separated individuals, and those with higher educational attainment demonstrated greater utilization of screening services. Participants with lower monthly family income were also more likely to utilize NCD services provided at HWCs. These findings suggest that both socio-demographic characteristics and perceived healthcare needs influence service utilization and highlight the importance of improving accessibility, awareness, and continuity of care for all population groups.

Community participation remains a cornerstone of the Health and Wellness Centre strategy. Active community engagement can improve health awareness, encourage early screening, strengthen feedback mechanisms, and promote utilization of preventive healthcare services. Lahariya et al.^[23] also emphasized the importance of an effective referral system linking primary, secondary, and tertiary healthcare facilities to ensure continuity of care for patients with chronic diseases and to enhance public confidence in the healthcare system. The present study is among the few comprehensive evaluations of Ayushman Bharat Health and Wellness Centres in North-East India and provides important evidence regarding programme implementation and utilization of NCD services. However, the study has certain limitations. It did not evaluate the insurance component (PM-JAY) of the Ayushman Bharat Mission, private empanelled hospitals, or HWCs located in the hilly districts of Manipur. Inclusion of these components would have enabled a more comprehensive assessment of programme implementation across the state.^[24] Nevertheless, the findings provide valuable baseline evidence for future evaluations and may assist programme managers and policymakers in strengthening comprehensive primary healthcare services through Ayushman Bharat Health and Wellness Centres.

CONCLUSION

The Ayushman Bharat Health and Wellness Centres in Manipur have established a satisfactory foundation for delivering comprehensive primary healthcare, particularly for screening and management of non-communicable diseases. Although basic infrastructure and core NCD services were available across most centres, important gaps remain in the availability of diagnostic facilities, selected essential medicines, teleconsultation services, wellness activities, and other expanded healthcare services. Utilization of NCD services was influenced by several socio-demographic factors, including age, gender, educational status, family income, and family history of NCDs. Strengthening infrastructure,

ensuring uninterrupted availability of medicines and diagnostic services, expanding community awareness, and providing regular capacity-building of healthcare personnel are essential to improve service utilization and achieve the objectives of comprehensive primary healthcare under the Ayushman Bharat Mission.

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Abbreviations: AB-HWC: Ayushman Bharat–Health and Wellness Centre; ANM: Auxiliary Nurse Midwife; ANMOL: Auxiliary Nurse Midwife Online; AYUSH: Ayurveda, Yoga and Naturopathy, Unani, Siddha and Homeopathy; CHO: Community Health Officer; CMHT: Chief Minister-gi Hakshegi Tengbang; GOI: Government of India; IEC: Information, Education and Communication; JHPIEGO: Johns Hopkins Program for International Education in Gynecology and Obstetrics; MAS: Mahila Arogya Samiti; MPW: Multipurpose Health Worker; NCD: Non-Communicable Diseases; PHC: Primary Health Centre; PHSC: Primary Health Sub-Centre; SC: Sub-Centre; SRS: Simple Random Sampling; UPHC: Urban Primary Health Centre; VHSNC: Village Health Sanitation and Nutrition Committee.

Declarations

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Conflict of Interest: The authors declare that there are no conflicts of interest.

Ethical Approval: The study was approved by the Institutional Ethics Committee (Protocol No. 248/17/PGT-2020).

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