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Exploring Usage And Coverage Of Ayushmann Bharat Digital Mission (Abdm) : Assessing And Analyzing The Usgae And Coverage In Teritary Care Hospital In Northern Maharastra

Patil Sarika P[1], Porwal Vriti[2], Kinge Amol D[3], Pagar Vikrant S[4], Chavan Sushant S[5], Patil Prashant[6], Bhamre Sayaji[7]

Affiliations
[1]Professor and Head, Department of Community Medicine, Shri Bhausaheb Hire Government Medical College, Dhule
[2]Third MBBS Student, Shri Bhausaheb Hire Government Medical College, Dhule
[3,4]Assistant Professor, Department of Community Medicine, Shri Bhausaheb Hire Government Medical College, Dhule
[5]Associate Professor, Department of Community Medicine, Shri Bhausaheb Hire Government Medical College, Dhule
[6]Associate Professor, Department of Physiology, Shri Bhausaheb Hire Government Medical College, Dhule
[7]Dean, Shri Bhausaheb Hire Government Medical College, Dhule

Corresponding Author
Dr Vikrant S Pagar
Assistant Professor,
Department of Community Medicine,
Shri Bhausaheb Hire Government Medical College, Dhule
Email: patil.vs9@gmail.com

ABSTRACT

Introduction: The Ayushman Bharat Digital Mission (ABDM) was launched to create a federated digital health ecosystem in India, with the Ayushman Bharat Health Account (ABHA) serving as the central tool for linking patient health records. Despite its potential to enhance healthcare access and affordability, concerns remain regarding its actual adoption and utilization in diverse healthcare settings.

Methodology: A cross-sectional descriptive study was conducted over two months at a tertiary care hospital in Northern Maharashtra, enrolling 496 patients from outpatient and inpatient departments using convenience sampling. Data were collected through a pre-tested structured questionnaire covering demographics, ABHA registration, utilization, out-of-pocket expenditure (OOPE), and barriers. Statistical analysis was performed using descriptive measures, Chi-square tests, and t- tests, with $p < 0.05$ considered significant.

Results: Among 496 participants, 60.9% were registered with ABHA, but only 4% reported utilization of benefits. Surgical care accounted for 80% of cases among utilizers, and 65% preferred private hospitals. The mean total OOPE in private hospitals was ₹15,850 compared to ₹4,731 in government hospitals ($p = 0.0086$), with significantly higher expenses for diagnostics and consumables in private facilities. Loss of wages was greater among government hospital users. The most common barriers to utilization were lack of awareness (27.7%), registered but never used (25.2%), digital illiteracy (8.9%), and preference for other schemes (5.7%).

Conclusion: The study demonstrates a substantial gap between ABHA registration and actual service utilization, with persistent reliance on private healthcare leading to higher financial burden. Strengthening awareness, digital literacy, hospital empanelment, and trust in public facilities is essential to realize the transformative potential of ABDM in achieving equitable and affordable healthcare.

KEYWORDS: Ayushman Bharat Digital Mission, ABHA, health accounts, digital health, utilization, out-of- pocket expenditure, India

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INTRODUCTION

The Ayushman Bharat Digital Mission (ABDM) introduced in September 2021 by the Government of India paves the way for establishing a federated, interoperable, and secure digital health system. Its main element, the Ayushman Bharat Health Account (ABHA), issues a unique 14-digit number to every citizen to store and share their health records among healthcare providers. Through harmonization with registers such as the Health Facility Registry (HFR), the Health Professional Registry (HPR) and, the Unified Health Interface (UHI), ABDM intends to facilitate better continuity of care, transparency and patient

engagement [1,2].

Despite its potential, ABDM use is in early stages with disparities in awareness, registration, and usage. According to the National Health Authority (NHA), 500 million ABHA numbers have been issued by 2024, but service utilization and linking with health records are still low [3]. Studies and documents identify barriers as low community awareness, digital illiteracy, low trust in digital, and infrastructural gaps at all public and private healthcare delivery sites [4,5]. These are the challenges for turning nearly high registration to an effective use of ABHA-linked services leading to decreased out-of-pocket expenses (OOPE) and improved health.

The aim of the present study, therefore, was to determine the knowledge, registration and utilization rates of ABHA-linked services by patients attending a tertiary care hospital from Northern Maharashtra. The study also investigates demographic and system-level determinants of utilization and differences in OOPE between public and private levels of care. The results are intended to inform opportunities to enhance ABDM implementation at the grassroots and overcoming barriers for digital health adoption.

METHODOLOGY

This cross-sectional descriptive study was conducted at a tertiary healthcare center in Northern Maharashtra over a period of two months after obtaining approval from the Institutional Ethics Committee. A total of 496 patients from outpatient and inpatient departments were enrolled using convenience sampling, while those in emergency or critical care and those unwilling to participate were excluded. The sample size was determined using the standard formula $n = Z^2 \times P(1-P)/d^2$ with an assumed prevalence of 50%, a 95% confidence interval, and an absolute precision of 5%, giving a minimum of 385; however, 496 participants were included to improve reliability. Eligible participants were those attending OPD and IPD services who were able to register for an Ayushman Bharat Health Account (ABHA). Informed consent was obtained, and confidentiality of responses was ensured.

Data were collected using a structured, pre-tested questionnaire that covered demographic details, awareness and knowledge of ABHA, extent of scheme utilization, out-of-pocket expenditure, and barriers faced. Trained investigators conducted face-to-face interviews in local languages where necessary. Data entry was performed in Microsoft Excel and exported to SPSS for analysis. Descriptive statistics were used to summarize demographic and awareness variables, while Chi-square tests assessed associations between categorical factors. Independent t-tests were used to compare out-of-pocket expenditure between government and private hospitals, with statistical significance considered at $p < 0.05$. Qualitative responses were thematically analyzed to capture participant perceptions and system-level challenges.

RESULTS

Table 1. Demographic Profile of Study Participants (N = 496)

Variable	Category	Number	Percentage (%)
Age (years)	<25	42	8.47
	26–35	159	32.06
	36–45	137	27.62
	46–55	72	14.52
	56–65	56	11.29
	>65	30	6.05
Gender	Male	317	63.91
	Female	179	36.09
Type of Residence	Rural	257	51.81
	Urban	239	48.19
Education	Illiterate	46	9.27
	Primary	154	31.05
	Secondary	192	38.71
	Higher Secondary	72	14.52
	Graduate	30	6.05
	Postgraduate	2	0.40
Socioeconomic Class	Class I	14	2.82

	Class II	111	22.38
	Class III	179	36.09
	Class IV	146	29.44
	Class V	46	9.27
Occupation	Farmer	98	19.76
	Household Work	120	24.19

The study included 496 participants, with the majority aged between 26 and 45 years (59.7%). Males constituted nearly two-thirds of the sample (63.9%), and just over half (51.8%) resided in rural areas. Most participants had secondary (38.7%) or primary (31.0%) education, while only 6.5% were graduates or postgraduates, and 9.3% were illiterate. Socioeconomically, the largest proportion belonged to Class III (36.1%) and Class IV (29.4%), whereas only 2.8% were from Class I. In terms of occupation, unskilled laborers (28.8%), household workers (24.2%), and farmers (19.8%) predominated. Family structure showed that about half of the participants (50.2%) lived in medium-sized families of 5–6 members, while one-third had small families and 16.5% belonged to large families.

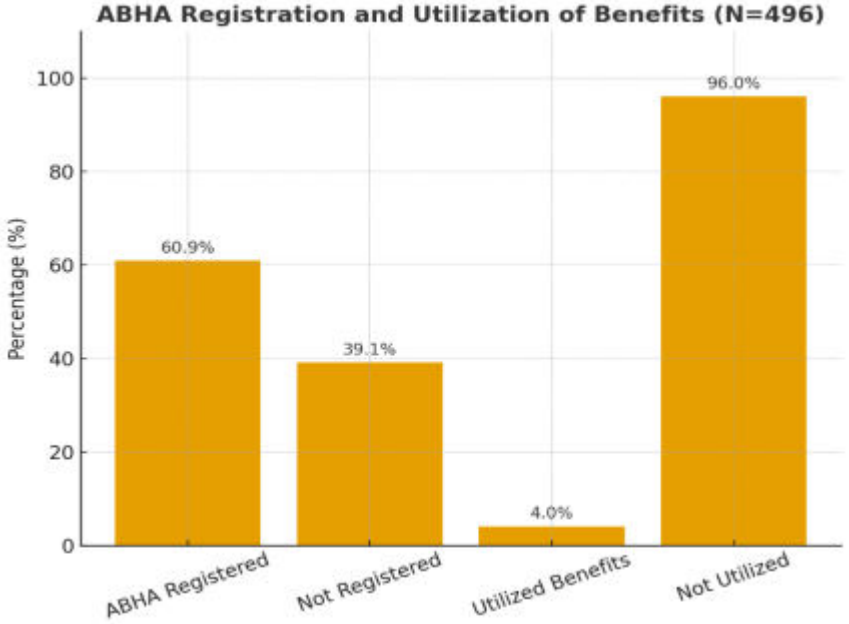

Fig 1- ABHA Registration and Utilization Status Among Study Participants

Out of 496 participants, 60.9% were registered with the Ayushman Bharat Health Account (ABHA), while 39.1% had not enrolled. Despite this, actual utilization of ABHA-linked benefits was extremely low, with only 4% of participants availing services.

Table 2. Registration and Utilization of ABHA Services (N = 496)

Variable	Category	Number	Percentage (%)
ABHA Registration	Yes	302	60.89
	No	194	39.11
Utilization of ABHA Benefits	Yes	20	4.03
	No	476	95.97
Type of Service Used (n=20)	Medical	4	20.00
	Surgical	16	80.00
Hospital Preference (n=20)	Government	7	35.00
	Private	13	65.00

Among the 20 users, surgical procedures accounted for the majority of cases (80%), while medical illnesses comprised

20%. Preference for private healthcare was higher, with 65% of users opting for private hospitals compared to 35% who accessed services in government facilities.

Table 3. Comparison of Out-of-Pocket Expenditure (OOPE) Between Private and Government Hospitals

Parameter	Private Hospitals (Mean, ₹)	Government Hospitals (Mean, ₹)	p-value
Non-covered Medical Expenses	53.85	142.86	0.3057
Room Rent Capping	4184.62	142.86	0.5420
Pre & Post-hospitalization Visits	1207.69	171.43	0.0680
Consumables	1815.38	664.29	0.0155*
Diagnostic Tests	2861.54	614.29	0.0015*
OPD Consultations	292.31	274.29	0.0611
Day Care Procedures	3384.62	142.86	0.0896
Transportation	396.15	364.29	0.4466
Loss of Wages	1653.85	2214.29	0.0491*
Total OOPE	**15850.00**	**4731.43**	*0.0086 **

*Significant at $p < 0.05$

The comparison of out-of-pocket expenditure (OOPE) revealed significantly higher costs for patients treated in private hospitals compared to government facilities. The mean total OOPE in private hospitals was ₹15,850, more than three times higher than the ₹4,731 observed in government hospitals, with the difference being statistically significant ($p = 0.0086$).

Expenditures on diagnostic tests and consumables were also markedly higher in private hospitals (₹2,861 vs. ₹614, $p = 0.0015$ and ₹1,815 vs. ₹664, $p = 0.0155$, respectively). Conversely, loss of wages was greater among government hospital patients (₹2,214 vs. ₹1,654, $p = 0.0491$), likely due to longer waiting times or hospitalization duration. Other categories, including room rent, transportation, and consultations, showed higher mean values in private hospitals, though these differences were not statistically significant.

Table 4. Barriers to Utilization of ABHA Services Among Non-users (n = 282)

Barrier	Number	Percentage (%)
Lack of Awareness	78	27.66
Registered but Never Used	71	25.18
Digital Illiteracy	25	8.87
Preference for Other Schemes	16	5.67
Hospital Non-approval	10	3.55
Lack of Information on Use	7	2.48
No Medical Need During Period	20	7.09
Financial Barriers	6	2.13
Miscellaneous / Narrative Issues	49	17.38

Among the 282 participants who did not utilize ABHA services despite eligibility, the most common barrier was lack of awareness, reported by 27.7% of respondents, followed by those registered but who never used the scheme (25.2%). Digital illiteracy was cited by 8.9%, while 7.1% reported no medical need during the study period. Preference for alternative schemes such as MJPJAY (5.7%), hospital non-approval (3.6%), and lack of information on how to use the card (2.5%) were other reasons for non-utilization. A small proportion (2.1%) mentioned financial barriers, whereas 17.4% gave miscellaneous or unclear responses. These findings highlight that lack of awareness and underutilization despite registration were the

most significant challenges to ABDM service uptake.

DISCUSSION

The present study highlights important insights into the awareness, registration, and utilization of the Ayushman Bharat Health Account (ABHA) as part of the Ayushman Bharat Digital Mission (ABDM). Despite a registration rate of 60.9%, actual utilization of benefits was extremely low at only 4%, which reflects a wide gap between enrolment and meaningful service uptake. Similar findings have been reported in national assessments of ABDM and PM-JAY, where high enrolment has not always translated into effective utilization, largely due to awareness deficits and systemic barriers [6,7].

The demographic profile of the study participants showed predominance of rural residents, individuals from lower socioeconomic classes, and occupations such as laborers and household workers. These groups are often the primary intended beneficiaries of ABDM, yet their limited digital literacy and inadequate access to health infrastructure hinder effective participation [8]. The predominance of surgical cases among ABHA utilizers in this study is consistent with evidence that catastrophic expenditures are more likely to occur during inpatient surgical care, which government insurance schemes aim to mitigate [9]. However, the finding that 65% of utilizers preferred private hospitals suggests a persistent trust deficit in government facilities, echoing prior studies where infrastructure shortages in public hospitals drove patients towards private care despite higher costs [10].

The comparison of out-of-pocket expenditure (OOPE) clearly demonstrated that patients in private hospitals incurred nearly three times the costs of those treated in government facilities. Expenditures on diagnostics and consumables were significantly higher in private settings, consistent with earlier reports that private healthcare often imposes unregulated user charges [11]. Interestingly, loss of wages was greater among government hospital users, likely reflecting longer waiting times and less efficient care pathways, an issue that has been identified as a critical bottleneck in public sector service delivery [12].

Barriers to utilization in this study were dominated by lack of awareness (27.7%) and registered but never used cases (25.2%), followed by digital illiteracy (8.9%). These align with findings from previous national surveys, which identified poor awareness, complex procedures, and digital exclusion as key challenges in ABDM adoption [13,14]. The preference for alternative schemes such as MJPJAY further indicates that parallel state programs with simpler processes may compete with ABDM rather than complement it.

Overall, these findings emphasize that while ABDM has made progress in registration, its effectiveness is limited by systemic and behavioral barriers. Addressing these gaps requires robust IEC campaigns, digital literacy initiatives, improved hospital empanelment, and stronger public-private partnerships. Without such measures, ABDM risks remaining a high-potential initiative with low real-world impact.

CONCLUSION

The present study revealed that although 60.9% of participants were registered with the Ayushman Bharat Health Account, actual utilization of benefits was extremely low at only 4%, with most users availing surgical care and showing a preference for private hospitals despite significantly higher out-of-pocket expenditures compared to government facilities. Barriers such as lack of awareness, digital illiteracy, hospital non-approval, and preference for other schemes were key reasons for non-utilization. These findings highlight a clear gap between enrolment and effective use of ABDM services, underscoring the urgent need for stronger awareness campaigns, digital literacy initiatives, streamlined hospital empanelment, and improved trust in public healthcare to ensure that the mission achieves its goal of equitable and affordable healthcare delivery.

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