

An Epidemiological Study of Utilization of Integrated Ayushman Bharat- Pradhan Mantri Jan Arogya Yojana and Mahatma Jyotirao Phule Jan Arogya Yojana at a Tertiary Care Center in Solapur, India

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Abstract

Background: The Integrated Ayushman Bharat- Pradhan Mantri Jan Arogya Yojana (AB-PMJAY) and Mahatma Jyotirao Phule Jan Arogya Yojana (MJPJAY) is public funded health insurance scheme in a state of Maharashtra. The scheme provides end to end cashless services for identified diseases through a network of hospitals from both the government sector as well as from private sector, covered under the scheme. Ayushman Bharat-Pradhan Mantri Jan Arogya Yojana (AB-PMJAY) is scheme of government of India. Such public funded health insurance schemes help to reduce out-of-pocket expenditure (OOPE). The study was designed with objective to describe an epidemiological profile of subjects registered under Integrated Mahatma Jyotirao Phule Jan Arogya Yojana and Pradhan Mantri Jan Arogya Yojana at a tertiary care center and to identify the utilization pattern of the scheme.

Methods: It was a record-based, retrospective cross-sectional study. The study population comprised of all the cases registered under integrated AB-PMJAY and MJPJAY from 1 September 2023 to 30 November 2023 at the tertiary care center. Sample size: All the cases (N= 1978) registered under the scheme from 1 September 2023 to 30 November 2023 at tertiary care center.

Results: Majority of the subjects (44.39%, n=878) belonged to the age group 40-59 years. In our study, 77.45% (n=1532) of the study subjects got pre-authorization approval. In case of pattern of utilization, 56.46% (n=865) of the study subjects utilized medical treatment and 43.54 % (n=667) of the study subjects utilized surgical treatment. In surgical treatment, utilization was more in polytrauma (15.92%, n=244), followed by general surgery (7.70%, n=118) and Ear, nose and throat (ENT) surgery (5.68%, n=87). In case of medical treatment, utilization was more in general medicine (14.30%, n=219), followed by nephrology (11.49%, n=176) and neurology (10.64%, n=163).

Conclusion: Majority of the subjects availing registration in the scheme were in the age group 40-59 years. Majority of the subjects utilized medical treatment. In case of specialty utilization, poly trauma was utilized more followed by general medicine. The utilization was least in case of cardio-thoracic surgery followed by dermatology, hematology and pediatric surgery.

Categories: Public Health, Epidemiology/Public Health, Health Policy

Keywords: out-of-pocket expenditure, ayushman bharat, pmjay, oope, utilization pattern, public funded health insurance, mjpjay

Introduction

The World Health Organization defines “universal health coverage” (UHC) as means to enable all people and communities to use promotive, preventive, curative, rehabilitative, and palliative health services they need, of sufficient quality to be effective, while also ensuring that the use of such services does not expose the user to financial hardship [1-3]. The International Labour Organization defines health insurance as “the reduction or elimination of the uncertain risk of loss for the individual or household by combining a larger number of similarly exposed individuals or households who are included in a common fund that makes good the loss caused to any one member” [4,5]. Health insurance policy is a contract between an insurance company and an individual and comes in handy in case of severe emergencies [6]. It is effective social security mechanism [7].

The Government of India launched Ayushman Bharat-Pradhan Mantri Jan Arogya Yojana (AB-PMJAY) on 23rd September 2018. This Yojana is government-funded health insurance scheme that covers more than 10.74 crore poor and vulnerable families [1]. Mahatma Jyotirao Phule Jan Arogya Yojana (MJPJAY) is a flagship health insurance scheme of Government of Maharashtra earlier known as Rajiv Gandhi Jeevandayee Arogya Yojana (RGJAY), was relaunched on 1st April 2017 by the Government of Maharashtra [8,9]. The

Integrated Ayushman Bharat-Pradhan Mantri Jan Arogya Yojana (AB-PMJAY) and Mahatma Jyotirao Phule Jan Arogya Yojana (MJPJAY) have been implemented in revised form across the state from 1st April, 2020 [8]. The scheme provides end to end cashless services for identified diseases through a network of service providers from Government and Private sector [8]. The scheme has many unique features to its credit to proactively reach beneficiary and guide the beneficiary to avail the services in a cashless manner [9].

The high out-of-pocket expenditure on health care, have a devastating effect on the lives of low-income individuals [10]. According to the 75th round (2017-18) of the National Sample Survey, 12% Indians have unmet health needs [11]. Inability to afford healthcare i.e. financial inaccessibility is one of the factors responsible for the unmet needs and, therefore, is a hindrance to UHC in India [11]. Out-of-pocket expenditure (OOPE), a major source of health financing in the country, contributes to 49.82% of total health expenditure [12]. In India, in 2018, 16.51% people faced catastrophic health expenses i.e. CHE (at a 10% threshold level), and 3.3% people were pushed into poverty due to OOPE on health [13].

The sizable section of population may avoid the treatment entirely due to financial constraints. The public funded health insurance schemes are helping the poor patients by increasing health care accessibility and by reducing health expenditure. The study done by Rao et al. about Rajiv Aarogyasri Community Health Insurance Scheme (RACHIS) in the state of Andhra Pradesh had found that it improved the access and greater benefits to below the poverty line (BPL) families to the secondary and tertiary healthcare [14]. There are many studies done in India about awareness and coverage of public funded health insurance schemes across states. There are very few studies done to access the pattern of utilization of such schemes. In this study, we aimed to know the utilization pattern of this government funded health insurance scheme at the tertiary care center in Solapur, which has played an important role in the implementation of the scheme.

Materials And Methods

Study design and setting

It was a record-based retrospective cross-sectional study. The study was conducted at a tertiary care center in Solapur district, India. Permission was obtained from the authorities of Integrated AB-PMJAY and MJPJAY as well as from the authorities of tertiary care center.

Study population and duration

The study population comprised of all the cases registered under the scheme from 1 September 2023 to 30 November 2023 at the tertiary care center. The data of all the registered cases during three months period was collected to ensure consistency and adequate data representation.

Sample size

The sample consisted of all cases (N= 1978) registered under Integrated AB-PMJAY and MJPJAY scheme from the period 1 September 2023 to 30 November 2023 at tertiary care center.

Inclusion criteria

All the cases registered under the scheme from the period 1 September 2023 to 30 November 2023 at tertiary care center were included in study.

Exclusion criteria

No exclusion criteria were applied as every case registered under the scheme during the study period was included.

Study instrument and data collection

The data for this study was retrospectively collected from the Integrated AB-PMJAY and MJPJAY records of the tertiary care center. All the records of study subjects registered under the scheme during the period from 1 September 2023 to 30 November 2023 were reviewed. The records included socio-demographic information, pre-authorization data, diagnosis, treatment modalities, department, claim status, package, claim paid amount under the scheme. The information was collected from online records. The required variables were entered in Microsoft EXCEL. The demographic information of those availing registration under the scheme such as age, gender, district of residence was collected. The socioeconomic status was determined on basis of type of ration card. The Pre-authorization data included pre-authorization status approved, rejected, cancelled or pending. Pre-authorization is required for approval to access services under an insurance scheme. Those subjects, who got preauthorization approval from state health assurance society (SHAS) were eligible for the treatment under the scheme and so could utilize the scheme. The information on diagnosis, type of treatment provided (medical treatment / surgical treatment) and department was collected. The The data of claim approval status, package under the scheme and claim paid amount under the scheme was collected. All the data was anonymized to protect patient confidentiality. Subsequent analysis was carried out.

Statistical analysis

This data was entered in Microsoft EXCEL (MS Excel) and analyzed in Epi Info software (version 7.2). The results were expressed in terms of frequencies and percentages for categorical variables. The analysis was carried out using the chi square test for goodness of fit for frequency distribution across specialties and Z test for proportion was used to check the statistical significance of proportion of medical treatment.

Ethical considerations

The Institutional Ethics Committee approval was taken from Dr. V. M. Government Medical College, Solapur (Approval No: IEC/169/24) The anonymity and confidentiality of the data was maintained as per ethical guidelines and regulations.

Results

In our study, majority of the study subjects (44.39%, n=878) belonged from the age group of 40-59 years. It was followed by 23.15% (n=458) of the study subjects in the age group of 15-39 years and 19.26% (n=381) of subjects in the more than 60 years of age group. Majority of male study subjects as well as female study subjects belonged to age group of 40-59 years. The number of males was higher in all the age groups except age group of 40-59 years, where female study subjects were more than males. The findings are outlined in (Table 1).

Age group (Years)	Sex				Total	
	Male		Female			
	Frequency (n)	Percentage (%)	Frequency (n)	Percentage (%)	Frequency (n)	Percentage (%)
<1	57	4.81	28	3.53	85	4.30
1-14	109	9.21	67	8.44	176	8.90
15-39	287	24.24	171	21.54	458	23.15
40-59	493	41.64	385	48.49	878	44.39
>60	238	20.10	143	18	381	19.26
Total	1184	100	794	100	1978	100

TABLE 1: Age and sex wise distribution of study subjects (N=1978)

Most of the study subjects (86.15%, n=1704) were from Solapur district only. It was followed by Dharashiv district (9.45%, n=187). 3.08% (n=61) of the study subjects were from Latur district. 1.31% (n=26) belonged from other districts. Findings are outlined in Figure 1.

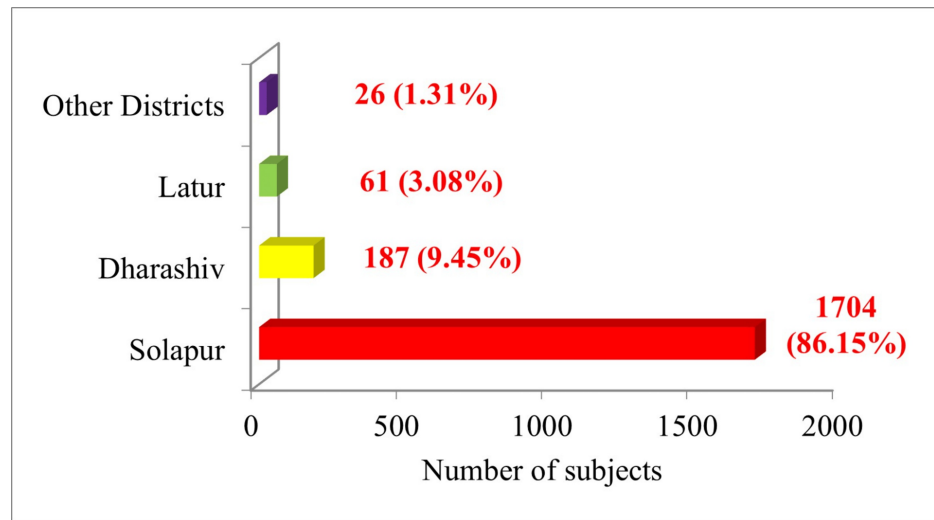


FIGURE 1: District wise distribution of study subjects (N= 1978)

In the study, we found that 54.35% (n=1075) of the study subjects were orange ration card holders. 39.99% (n=791) were yellow ration card holders and 5.66% (n=112) of the study subjects holding Antyodaya ration card (Figure 2). Ration card is an official document issued to households as per eligibility to purchase subsidized food grains from the Public Distribution System (PDS).

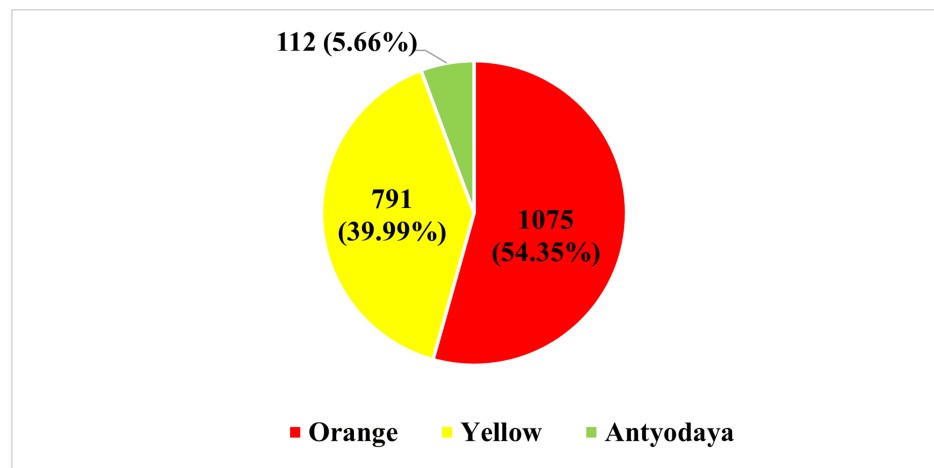


FIGURE 2: Classification of study subjects on basis of type of ration card (N= 1978)

In our study, 77.45% (n=1532) of the study subjects got pre-authorization approval from state health insurance society (SHAS). Preauthorization was rejected in 12.03% (n=238) and was cancelled in 6.83% (n=135) of the study subjects. It was pending in case of 3.69% (n=73) of the study subjects. These findings are highlighted in Figure 3.

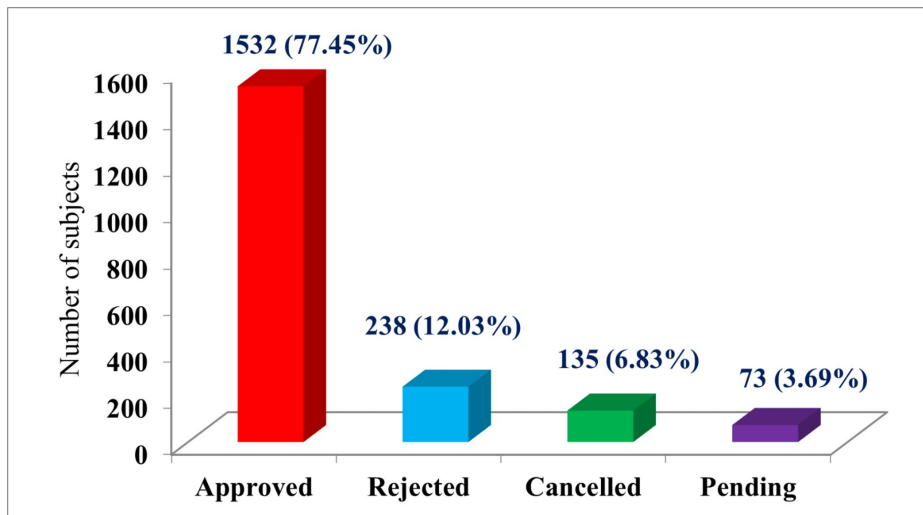


FIGURE 3: Pre-authorization status of study subjects (N= 1978)

In case of pattern of utilization, 56.46% (n=865) of the study subjects utilized medical treatment and 43.54% (n=667) of the study subjects utilized surgical treatment (Figure 4).

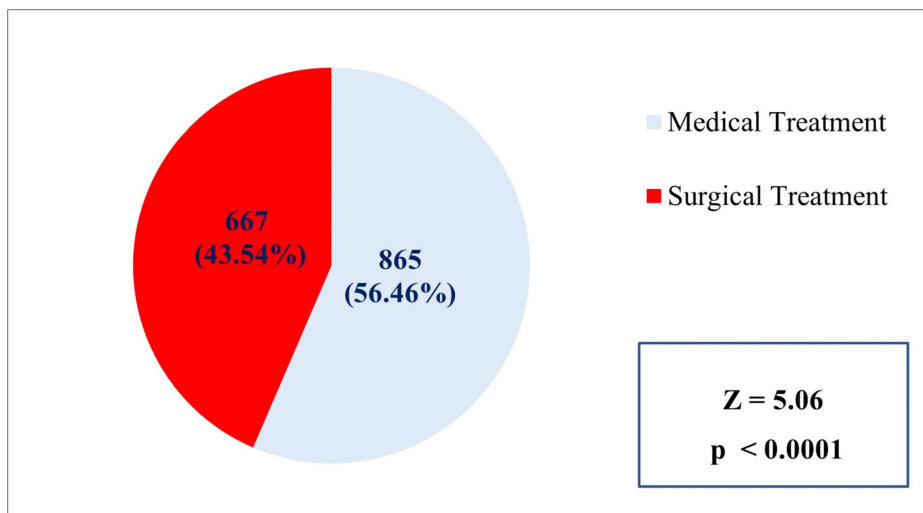


FIGURE 4: Percentage distribution of patients by type of treatment received (N=1532)*

* Number of study subjects who got pre-authorization approval during study duration, could avail the treatment under the scheme

p=0.00000042 (Z test for Proportion)

Overall, majority of the study subjects utilized polytrauma (15.92%, n=244). It was followed by general medicine (14.30%, n=219), nephrology (11.49%, n=176), and neurology (10.64%, n=163). In case of surgical treatment, utilization was more polytrauma (15.92%, n=244). It was followed by general surgery (7.70%, n=118) and Ear, nose and throat (ENT) surgery (5.68%, n=87). In case of medical treatment, utilization was more in general medicine (14.30%, n=219), followed by nephrology (11.49%, n=176) and neurology (10.64%, n=163). The utilization was least in case of cardio-thoracic surgery (0.07%, n=one), followed by dermatology (0.13%, n=two), hematology (0.13%, n=two) and pediatric surgery (0.32%, n=five). These findings are outlined in Table 2.

Specialty	Subjects		Test
	Frequency (n)	Percentage (%)	
Burns	11	0.72	$\chi^2 = 1794.95$, $df = 22$, $p < 0.001$
Cardiothoracic surgery	01	0.07	
Cardiology	23	1.50	
Critical Care	11	0.72	
Dermatology	02	0.13	
Endocrinology	22	1.44	
ENT Surgery	87	5.68	
Gastroenterology	31	2.02	
General Medicine	219	14.30	
General Surgery	118	7.70	
Genitourinary System	07	0.46	
Gynaec and Obgy Surgery	39	2.54	
Hematology	02	0.13	
Nephrology	176	11.49	
Neurology	163	10.64	
Neurosurgery	30	1.96	
Orthopedics	72	4.70	
Ophthalmology surgery	31	2.02	
Pediatric surgery	05	0.32	
Pediatrics	122	7.96	
Poly trauma	244	15.92	
Pulmonology	94	6.14	
Surgical Oncology	22	1.44	
Total	1532	100	

TABLE 2: Specialty wise management of study subjects (n=1532)

df= degree of freedom

Chi square test for goodness of fit

The claim paid amount in case of 98.63% (n=1511) of subjects was less than or equal to 50000 Indian rupees (≤ 50000 INR). In case of 1.37% (n=21) of subjects, the claim paid amount was greater than 50000 Indian rupees to less than or equal to one lakh Indian rupees (> 50000 INR to ≤ 100000 INR) (Figure 5).

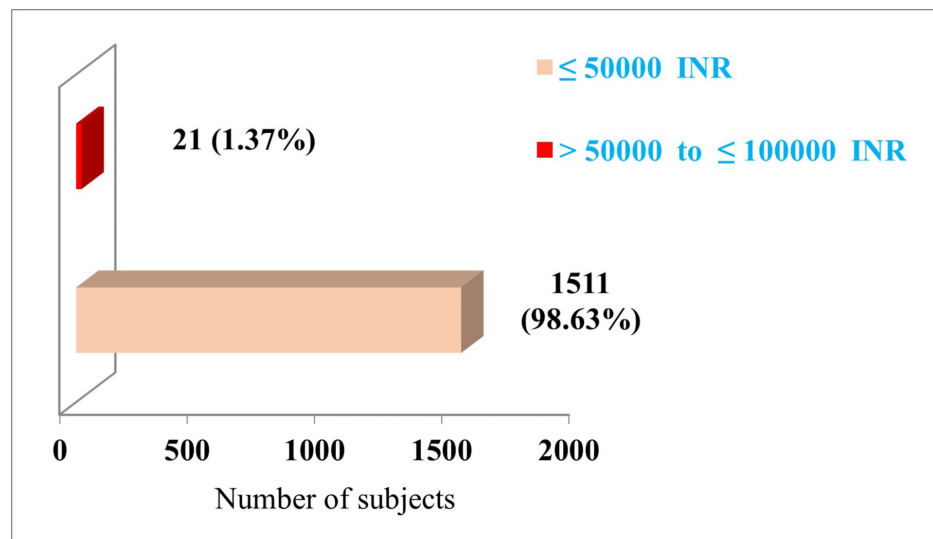


FIGURE 5: Distribution on basis of claim paid amount (n=1532)

INR=Indian rupees

Discussion

The Niti Aayog report has highlighted non-uniform accessibility to healthcare across the country. There is disparity between rural and urban India as far as health access is concerned. It is fact that many families or individuals have to pay out of their own pockets due to unexpected illness and rise in health care expenses [15]. The publicly funded health insurance schemes are playing important role in order to improve health care accessibility and reducing out of pocket expenditure [16]. Such schemes have been useful in reducing the economic burden of poor and vulnerable families.

In the study, it was found that the majority of the subjects (44.39%, n=878) were aged between 40-59 years. Majority of male study subjects as well as female study subjects belonged to age group of 40-59 years. This age group being the primary beneficiary of this public health initiative. The study done by Radhakrishnan A et al. had also similar findings [10]. This may be due to rising burden of non-communicable diseases (NCDs) in this age group. The study done by Naaz et al. had also found that non communicable diseases related claims were maximum indicating NCD burden [17]. It was found in the study that the number of males was higher in all the age groups except age group of 40-59 years, where female study subjects were more than males. This may be due to post-menopausal health problems in the age group along with burden of NCDs and age related conditions. This highlights need for regular health screenings and designing gender-responsive interventions. In the study, majority of the study subjects (86.15%, n=1704) were from Solapur district. There is need as well as opportunities for decentralization of healthcare services in stepping towards UHC.

We found that majority of study subjects (54.35%, n=1075) holding orange ration card, representing those above the poverty line. It was followed by yellow ration card holders (39.99%, n=791) representing those below poverty line. Those below poverty line may have lower health literacy, lower awareness about the scheme. The similar findings have been noted in study done by Radhakrishnan A et al. [10]. It was emphasized by Balarajan et al. that there are differential trends in inequalities suggesting differential uptake and access to healthcare services by different groups [18].

In the study, 77.45% (n=1532) of the study subjects got pre-authorization approval from state health assurance society (SHAS). The near similar findings have been reported in the study done Radhakrishnan A et al [10]. Preauthorization was rejected in 12.03% (n=238) and was cancelled in 6.83% (n=135) of the study subjects. It was pending in case of 3.69% (n=73) of the study subjects. It may be due to inadequate documentation or delay in online updating of data and protocols. The study shows a relatively high pre-authorization approval rate. The rejection and cancellation rates highlight the challenges in making universal access to healthcare.

In case of utilization pattern, we found that majority of the study subjects (56.46%, n=865) utilized medical treatment. 43.54% (n=667) of the study subjects utilized surgical treatment. In case of specialty utilization majority of the study subjects utilized polytrauma (15.92%, n=244), followed by general medicine (14.30%, n=219).

In case of surgical treatment, utilization was more in polytrauma (15.92%, n=244), indicating significant burden of traumatic injuries. It was followed by general surgery (7.70%, n=118) and ENT surgery (5.68%,

n=87). In case of medical treatment, utilization was more in general medicine (14.30%, n=219) in consistent with rising burden of chronic non communicable diseases. It was followed by nephrology (11.49%, n=176) and neurology (10.64%, n=163), indicating the demand for health care services for acute and chronic conditions related to kidneys and nervous system thorough publicly funded health insurance scheme. The utilization was least in case of cardio-thoracic surgery (0.07%, n=one), followed by dermatology (0.13%, n=two), hematology (0.13%, n=two) and pediatric surgery (0.32%, n=five). The study done by Naaz et al. had found that overall medicine department claims (PMJAY) at 42% [17].

The claim paid amount in case of majority of study subjects (98.6%, n=1511) was less than or equal to 50000 Indian rupees (INR). These findings are emphasizing further capacity building of tertiary care hospitals and frequent package revisions.

It is reported in the study by Rao et.al that inpatient care is only consumed by a small proportion of households in a year [19]. The lack of adequate knowledge among the beneficiaries is the concern for not utilizing such schemes The study done by Thomas et.al done in three districts of Gujrat found that 43.3 % of beneficiaries utilized the benefit of Ayushman Bharat scheme [20]. The study done by Maiya et al. done among 300 households in rural area had found that 47.24% of the households availed the Ayushman Bharat scheme [15].

It is recommended based on findings of the study that the training of resident doctors and or doctors & health care workers in the empaneled hospitals needs to be done at regular intervals so as to facilitate increase in the preauthorization approval and availing of the scheme. There is need to improve the communication between health care workers and beneficiaries. The awareness at the level of empaneled hospitals can be increased through Information, Education and Communication (IEC) and through community needs assessment approach. Media platforms will help to increase the outreach of such schemes. The local television channels and radio will be helpful in broad community outreach. The social media platforms like Facebook , X (Twitter), Instagram can help in targeted interactive communication. These platforms can help to deliver concise information about the scheme. Those, who have successfully availed the scheme, can become the Champions of the scheme to deliver the message to the community. This will help increase awareness as well as will encourage the community to utilize the scheme. There is urgent necessity to adopt comprehensive preventive approaches. The Policy intervention “Universal Health Coverage” at the level of government will help increase the healthcare access and reduce OOPe.

Conclusions

In the study, subjects availing registration in the scheme were more in age group 40-59 years. Majority of the subjects were males. The registration was more among above poverty line (APL) card holders. Majority of the subjects utilized medical treatment. In case of specialty utilization, poly trauma was utilized more followed by general medicine. In case of medical treatment, utilization was more in general medicine followed by nephrology and neurology. In case of surgical utilization, utilization was more in polytrauma followed by general surgery and ENT surgery. The findings are emphasizing further capacity building for trauma care and chronic disease management as well as at the level of policy making, to strengthen the related packages offered by publicly funded health insurance scheme so that there will be no out of pocket expenditure for the beneficiaries. It also highlights the community need for comprehensive preventive approaches for prevention of accidental traumatic injuries as well as for the non-communicable diseases.

The utilization was least in case of cardio-thoracic surgery followed by dermatology, hematology and pediatric surgery. There is need for increasing awareness at the specialties where utilization was least as well as at the policy level, having reassessment at available packages in such specialties. There is also need to strengthen surgical super specialty services to provide robust access to the utilization. The limitation of present study is that it was hospital record based and was conducted at one tertiary care center. Multi-centric studies all over the state or in the different states of India needs to be done. Despite the limitations, the pattern of utilization has given insights into the benefits of this scheme and the scope for further improvement. This epidemiological study through the understanding about patterns of utilization of publicly funded health insurance scheme will further help stakeholders involved in policy & decision making better address the service delivery and ultimately improve health outcomes. The study will also help for guiding resource allocation, healthcare policy and future research initiatives.

Additional Information

Disclosures

Human subjects: Consent for treatment and open access publication was obtained or waived by all participants in this study. The Institutional Ethics Committee approval was taken from Dr. V. M. Government Medical College, Solapur issued approval IEC/169/24. No ethical issues could be observed; hence clearance is granted. **Animal subjects:** All authors have confirmed that this study did not involve animal subjects or tissue. **Conflicts of interest:** In compliance with the ICMJE uniform disclosure form, all authors declare the following: **Payment/services info:** All authors have declared that no financial support was received from any organization for the submitted work. **Financial relationships:** All authors have declared that they have

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