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Healthcare Utilization, Demographic Disparities and Financial Protection under the Ayushman Bharat PM-JAY SEHAT Scheme: Evidence from District Baramulla, Jammu and Kashmir

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Abstract

Ayushman Bharat Pradhan Mantri Jan Arogya Yojana-SEHAT (AB-PMJAY-SEHAT) represents a significant policy initiative aimed at achieving Universal Health Coverage (UHC) by improving access to quality healthcare and providing financial protection against catastrophic health expenditure in the Union Territory of Jammu and Kashmir. This study examines the trends in healthcare utilization, rural-urban and gender disparities, and healthcare expenditure under the AB-PMJAY-SEHAT scheme in District Baramulla during the period 2020-2024. The study is based on secondary data obtained from two empaneled public healthcare institutions-Government Medical College (GMC) Baramulla and Sub-District Hospital (SDH) Kreeri. A mixed-methods analytical framework comprising descriptive statistics, trend analysis, disparity indices, the Shapiro-Wilk normality test, and independent-samples *t*-tests was employed to assess utilization patterns and demographic differences. The findings reveal a substantial increase in healthcare utilization across major medical and surgical specialties, indicating the progressive expansion of the scheme and improved access to healthcare services. General Medicine exhibited the highest growth, while General Surgery, Ophthalmology, ENT, and Orthopaedic services also recorded significant increases over the study period. The Shapiro-Wilk test confirmed that the data satisfied the assumption of normality, justifying the application of parametric statistical analysis. The independent-samples *t*-test demonstrated a highly significant rural-urban disparity in healthcare utilization ($t = 6.75$, $p < 0.001$), with rural beneficiaries exhibiting substantially higher utilization than urban beneficiaries. Furthermore, a statistically significant gender difference was observed (*t*

= –2.90, $p = 0.05$), with female beneficiaries recording higher overall utilization, although gender disparities varied across medical specialties. The expenditure analysis further indicates that the scheme has strengthened financial protection by supporting access to both routine and specialized healthcare services. The study concludes that AB-PMJAY-SEHAT has substantially enhanced healthcare utilization and expanded access to secondary and tertiary healthcare services in District Baramulla. However, persistent geographical and specialty-specific disparities underscore the need for targeted policy interventions focusing on equitable healthcare access, strengthened district-level health infrastructure, increased beneficiary awareness, and continuous monitoring to enhance the effectiveness of the scheme in advancing Universal Health Coverage.

Keywords: PM-JAY SEHAT, Universal Health Coverage, Healthcare Utilization, Rural-Urban Disparity, Gender Disparity, Financial Protection, Jammu and Kashmir

1. Introduction

Ensuring equitable access to affordable and quality healthcare continues to be a major public health challenge in India. A key factor contributing to this challenge is the high level of out-of-pocket expenditure (OOPE), which places a substantial financial burden on individuals and households (Kamath S et al 2025). It is estimated that nearly 72% of OOPE is incurred on primary healthcare services, reflecting persistent inadequacies in public healthcare financing and the limited availability of accessible and affordable healthcare services (Prasad et al 2021). Consequently, improving financial protection and expanding access to essential health services have remained central concerns in both national and international health policy agendas. The Alma-Ata Declaration of 1978 identified primary healthcare as the foundation for achieving the objective of Health for All, emphasizing equity, universal accessibility, community participation, and inter-sectoral collaboration as the core principles of effective health systems (Hone et al., 2018). India's pursuit of Universal Health Coverage (UHC) has been shaped by several landmark policy initiatives over the past decades. The Bhore Committee Report (1946) laid the foundation for a comprehensive and publicly funded healthcare system, a vision that subsequently influenced the National Health Policies of 1983 and 2002 (Suresh 2019)

This commitment was further strengthened through the National Health Policy 2017, which emphasized equitable access to quality healthcare services alongside financial protection against catastrophic health expenditures (Priya 2023) Despite these policy reforms, a significant proportion of the Indian Raban population continues to face inadequate financial risk protection,

resulting in unequal access to essential healthcare services and increased vulnerability to health-related poverty (Rao et al 2018)Data from the National Sample Survey (2004-2014) indicate that the proportion of households incurring catastrophic healthcare expenditure increased by nearly 10% during the study period (Raban et al 2013).This trend is closely associated with the predominant role of the private healthcare sector, which accounts for more than three-fourths of outpatient consultations and nearly two-thirds of inpatient services across the country (Saha et al., 2018). At the same time, India is experiencing an epidemiological and demographic transition marked by an increasing prevalence of non-communicable diseases (NCDs), population ageing, and longer life expectancy. These developments have substantially increased the demand for expensive secondary and tertiary healthcare services, thereby exposing the limitations of existing healthcare financing arrangements and underscoring the necessity for comprehensive publicly funded health insurance programmes (Biswas et al., 2023)

Recognizing the growing need for financial risk protection and equitable access to healthcare, the Government of India launched the Ayushman Bharat-Pradhan Mantri Jan Arogya Yojana (AB-PMJAY) on 23 September 2018 in Ranchi, Jharkhand, as the flagship health insurance component of the Ayushman Bharat Programme (Reddy & Mahesh, 2024). The scheme provides cashless hospitalization coverage of up to ₹5 lakh per family per year for secondary and tertiary healthcare services to over 12 crore eligible families (approximately 55 crore beneficiaries) identified primarily through the Socio-Economic Caste Census (SECC) 2011, making it one of the world's largest publicly funded health insurance programmes. Through a network of empaneled public and private hospitals, AB-PMJAY aims to reduce out-of-pocket expenditure, improve access to quality healthcare for vulnerable populations, and advance India's commitment to Universal Health Coverage (UHC) and Sustainable Development Goal 3 (SDG-3) (Sivarchaka & Mamgain, 2024; Parmar et al., 2023; Ministry of Health and Family Welfare, 2025).

Union Territory of Jammu and Kashmir, PMJAY has been expanded through the Pradhan Mantri Jan Arogya Yojana-Social Endeavour for Health and Telemedicine (PMJAY-SEHAT). Unlike PMJAY in other Indian states, the SEHAT scheme provides universal health insurance coverage to all permanent residents regardless of their socioeconomic status (Ganai S, Mir MS 2023) This universal approach distinguishes PMJAY-SEHAT as a significant policy intervention aimed at addressing regional disparities in healthcare accessibility and financial protection (Chatwal S. 2023). Considering the unique geographical terrain, mixed public–private healthcare delivery

system, and historical inequalities in healthcare access within Kashmir, the scheme has considerable potential to improve healthcare utilization while reducing the financial burden associated with medical care (Grewal H. et al., 2023)

The Ayushman Bharat Pradhan Mantri Jan Arogya Yojana–SEHAT (AB-PMJAY-SEHAT) was launched by the Government of India on 26 December 2020 to extend comprehensive health insurance coverage to all residents of Jammu and Kashmir. The scheme provides cashless health coverage of up to ₹5 lakh per family per year on a family-floater basis for secondary and tertiary healthcare services through empanelled public and private hospitals. In addition to financial coverage, the scheme provides national portability, covers pre-existing diseases from the beginning of coverage, and imposes no restriction on family size or age. By reducing the financial burden associated with hospitalization and improving access to essential healthcare services, AB-PMJAY-SEHAT is designed to strengthen financial protection against catastrophic health expenditure and contribute to the broader objective of Universal Health Coverage (UHC) in Jammu and Kashmir (Government of India, 2020; National Health Authority, 2022; State Health Agency, 2026).

The introduction of PM-JAY and its extension through SEHAT represents a significant policy intervention towards improving financial protection and healthcare access among vulnerable and previously underserved populations. Existing literature on PM-JAY has primarily focused on enrolment, healthcare utilization, financial protection, out-of-pocket expenditure, and implementation-related challenges at the national and state levels (NITI Aayog, 2021; National Health Authority, 2022). Several studies have indicated that publicly financed health insurance schemes can increase access to hospitalization and reduce the financial burden associated with healthcare expenditure. However, the effectiveness of such schemes depends not only on the availability of financial coverage but also on beneficiaries' awareness of scheme provisions, their ability to access empaneled healthcare facilities, and their understanding of the procedures required to avail themselves of benefits (Keshri & Gupta, 2020; Prinja et al., 2021). Thus, awareness and accessibility constitute important dimensions of effective health insurance coverage and should be examined alongside utilization and financial protection.

Despite the growing literature on PM-JAY, evidence concerning beneficiaries' awareness and accessibility remains relatively limited, particularly in geographically and socioeconomically

diverse regions. Previous studies have highlighted variations in healthcare utilization and financial protection across socioeconomic groups and geographical settings, suggesting that the benefits of publicly funded health insurance may not be distributed uniformly among beneficiaries (Garg et al., 2020; Mohanty et al., 2023). Geographical barriers, availability of healthcare facilities, information gaps, administrative procedures, and differences in socioeconomic conditions may influence the extent to which eligible beneficiaries are able to understand and effectively utilize scheme benefits. Consequently, assessing awareness and accessibility at the local level is important for identifying gaps between formal entitlement and actual access to healthcare services.

In the context of Jammu and Kashmir, the available empirical literature on PM-JAY and PM-JAY-SEHAT remains comparatively sparse. Existing studies have mainly examined healthcare utilization, financial protection, and implementation-related issues, while relatively limited attention has been given to beneficiaries' awareness of scheme provisions and their accessibility to healthcare services (Dash et al., 2019; Garg et al., 2020; Mohanty et al., 2023). More importantly, district-level evidence examining these dimensions remains inadequate. The geographical and socioeconomic diversity of Jammu and Kashmir makes district-level analysis particularly relevant, as beneficiaries' experiences with the scheme may vary according to location, availability of healthcare facilities, socioeconomic characteristics, and access to information.

Against this background, the present study seeks to address this research gap by examining the awareness and accessibility of AB-PMJAY-SEHAT among beneficiaries in District Baramulla. The district has distinctive geographical, demographic, and healthcare characteristics that may influence beneficiaries' knowledge of the scheme, their awareness of its provisions, and their ability to access healthcare services under the programme. Findings from studies conducted at the national or broader state level may therefore not adequately capture the specific realities faced by beneficiaries in Baramulla. A district-level assessment can provide more context-specific evidence regarding the extent of awareness, patterns of accessibility, and the factors that may facilitate or constrain effective access to scheme benefits.

The study is therefore important not only from the perspective of assessing the performance of AB-PMJAY-SEHAT at the local level but also for understanding the extent to which the intended benefits of publicly financed health insurance translate into actual healthcare access. By focusing

specifically on beneficiaries' awareness of scheme provisions and their accessibility to healthcare services, the study aims to generate empirical evidence that can assist policymakers, programme administrators, and other stakeholders in identifying existing gaps and strengthening the implementation of PMJAY-SEHAT. Such evidence may contribute to improving information dissemination, facilitating access to empaneled healthcare facilities, strengthening service delivery, and ultimately enhancing the effectiveness of health protection initiatives towards the achievement of Universal Health Coverage in Jammu and Kashmir.

The remainder of the paper is structured as follows. Section 2 reviews the existing literature on AB-PMJAY and related health insurance interventions. Section 3 presents the data and methodology adopted for the study. Section 4 provides a detailed statistical analysis of beneficiaries' awareness and accessibility of PMJAY-SEHAT. Finally, Section 5 concludes the study and presents relevant policy recommendations based on the empirical findings.

2. Literature Review

The implementation of Ayushman Bharat–Pradhan Mantri Jan Arogya Yojana (AB-PMJAY) has generated considerable scholarly interest, particularly with regard to healthcare utilization, financial protection, beneficiary awareness, health insurance coverage, and implementation challenges. The existing literature provides important insights into the effectiveness and limitations of the scheme across different geographical and socio-economic contexts.

Garg et al. (2020) examined the effect of enrolment in PM-JAY on hospital utilization and financial protection in Chhattisgarh, a state with considerable experience in publicly funded health insurance (PFHI) programmes. Drawing upon repeated cross-sectional data and employing Propensity Score Matching and instrumental-variable methods, the study found that PM-JAY enrolment did not result in a significant increase in hospital-care utilization or a reduction in catastrophic health expenditure and out-of-pocket expenditure (OOPE). The study further observed that OOPE remained substantially higher among beneficiaries using private healthcare facilities. These findings raise important concerns regarding the extent to which insurance coverage alone can ensure effective financial protection and equitable access to healthcare.

In a broader review of Ayushman Bharat and health insurance programmes, Agarwal et al. (2022) highlighted the significance of a strong and inclusive healthcare system capable of providing

affordable and quality services across rural and urban areas. The authors emphasized that Ayushman Bharat represents an important policy intervention for promoting inclusive healthcare and strengthening health insurance protection among economically vulnerable populations.

Beneficiary awareness and understanding of scheme provisions have also emerged as critical determinants of effective implementation. Dash et al. (2019), based on household surveys, key-informant interviews, and field observations across Tamil Nadu, Haryana, and Bihar, examined beneficiaries' knowledge of PM-JAY, its eligibility and identification mechanisms, and the challenges encountered during implementation. The study reported considerable variations in awareness across states, with relatively lower awareness in Bihar and Haryana compared with Tamil Nadu, where PM-JAY was integrated with an existing state-level programme. The authors consequently emphasized the need for greater awareness generation, improved beneficiary identification, and the removal of supply-side barriers to strengthen the effectiveness of the scheme.

The effectiveness of PM-JAY in improving broader health outcomes has also been examined. Majumdar et al. (2022) compared women's and children's health outcomes between PM-JAY-implementing and non-implementing states using National Family Health Survey data and a difference-in-differences approach. The study found no statistically significant differences in the selected health outcomes between the two groups of states. While the findings suggested that the expected health gains had not yet materialized, the authors noted that the relatively early stage of programme implementation warranted continued evaluation rather than a premature assessment of its long-term effectiveness.

At the national level, Mohanty et al. (2023) assessed changes in publicly funded health insurance coverage following the introduction of PM-JAY using nationally representative NFHS data. The study reported an increase in health insurance coverage in both rural and urban areas, accompanied by a reduction in pro-rich inequality and a narrowing of geographical disparities. However, the authors cautioned that not all observed gains could be conclusively attributed to PM-JAY and that the magnitude of improvement remained insufficient to achieve universal coverage among the poorest sections of the population. This highlights the continuing importance of examining not only formal coverage but also the extent to which beneficiaries are able to access and utilize entitled healthcare services.

Evidence from Jammu and Kashmir has begun to emerge with the introduction of AB-PMJAY-SEHAT. Bashir et al. (2023) investigated the impact of the scheme on cardiac healthcare delivery in the Kashmir Valley by comparing cardiac interventions before and after its implementation. The study reported a significant increase in interventional cardiac procedures following the introduction of AB-PMJAY-SEHAT, including both elective and emergency procedures. An increase was also observed in the use of advanced cardiac devices. These findings indicate the potential of the scheme to improve access to specialized tertiary healthcare services.

Implementation-related factors have received further attention in the work of Srivastava et al. (2023), who examined the organizational and contextual factors influencing the implementation of PM-JAY across three different state-level models. Based on qualitative evidence from stakeholders at national, state, district, and hospital levels, the study found that the flexibility of PM-JAY guidelines enabled states to adapt implementation mechanisms to their local contexts. Nevertheless, challenges remained in relation to institutional capacity, staff competencies, implementation support, and coordination between programme objectives and the requirements of implementing agencies.

Financial protection remains one of the central objectives of PM-JAY. Garg et al. (2023) assessed the scheme's effectiveness in reducing OOPE and distress financing associated with institutional deliveries using NFHS-5 data. Their findings suggested that enrolment in PM-JAY or other PFHI programmes was not significantly associated with reductions in OOPE or distress financing. Moreover, expenditure in private hospitals was substantially higher than in public hospitals. The findings reinforce the argument that insurance coverage must be accompanied by adequate provider networks, effective regulation, and improvements in the quality and availability of public healthcare services.

At the community level, Prasad et al. (2023) examined awareness and utilization of AB-PMJAY among rural households in Bihar. The study found a relatively high level of general awareness but considerably lower actual utilization among eligible beneficiaries. Significant associations were observed between awareness and selected socio-economic characteristics, including employment status and possession of a ration card. The gap between awareness, eligibility, and actual utilization suggests that knowledge of a scheme does not necessarily translate into effective access to its benefits.

Angel et al. (2019) critically examined the Ayushman Bharat programme and emphasized that its success depends substantially on appropriate planning, effective implementation, and complementary interventions. The study argued that sustained institutional and policy support would be essential for realizing the programme's broader objective of strengthening India's healthcare system and advancing Universal Health Coverage.

More recent evidence has also examined the financial protection dimension of PM-JAY. Kanwal et al. (2024), in a hospital-based study conducted in Himachal Pradesh, assessed the role of AB-PMJAY in reducing catastrophic health expenditure among hospitalized patients. The study reported a substantial decline in the proportion of out-of-pocket expenditure following hospitalization among beneficiaries, suggesting that PM-JAY can provide meaningful financial protection in tertiary healthcare settings.

2.1 Research Gap

The foregoing literature demonstrates that AB-PMJAY has been examined from diverse perspectives, including healthcare utilization, financial protection, insurance coverage, beneficiary awareness, health outcomes, and implementation processes. However, the findings remain context-specific and reveal that formal enrolment or insurance coverage does not necessarily guarantee awareness, accessibility, utilization, or effective financial protection. Furthermore, while emerging evidence from Jammu and Kashmir, particularly from the Kashmir Valley, indicates the potential of AB-PMJAY-SEHAT to improve access to specialized healthcare, systematic district-level evidence remains comparatively limited.

In particular, there is a paucity of empirical research examining beneficiaries' awareness and accessibility of AB-PMJAY-SEHAT at the district level in Jammu and Kashmir, especially in District Baramulla. This gap is significant because geographical, socio-economic, institutional, and infrastructural conditions may influence the extent to which beneficiaries are able to translate scheme entitlements into actual healthcare access. Against this backdrop, the present study seeks to examine the awareness and accessibility of AB-PMJAY-SEHAT, quality of healthcare services, its impact on health outcomes, and changes in health-related behaviour among beneficiaries in District Baramulla. The study thereby aims to contribute district-specific empirical evidence to the growing literature on publicly funded health insurance and Universal Health Coverage in Jammu and Kashmir.

3.Data Source and Methodology

3.1 Data and Variable Description

The study uses secondary data collected from two hospitals empaneled under the Ayushman Bharat-Pradhan Mantri Jan Arogya Yojana (AB-PMJAY), namely GMC Baramulla and SDH Kreeri. The dataset covers the period 2020–2024 and contains anonymized information on beneficiaries who utilized healthcare services under the scheme. AB-PMJAY aims to improve access to secondary and tertiary healthcare while providing financial protection to eligible households (WHO, 2025; Government of India, 2026). The main variable is healthcare utilization, measured by the annual number of patients receiving treatment across six categories: General Medicine, General Surgery, Ophthalmology, ENT, Orthopedics, and Other Services. These categories are used to examine changes in healthcare utilization over time. The study also considers place of residence (urban/rural) and gender to assess potential disparities in healthcare utilization, such demographic disaggregation is important because geographical and gender-related factors can influence access to and utilization of healthcare services (Balarajan et al., 2011; Dwivedi et al., 2023).

In addition, healthcare expenditure, measured in Indian Rupees (INR), is analyzed for General Surgery, Ophthalmology, ENT, and Orthopedics. Expenditure is used to examine financial trends in healthcare provision under the scheme and is relevant to the financial-protection objective of universal health coverage (WHO, 2025).

3.2 Research Methodology

The present study employs a quantitative analytical approach incorporating descriptive statistics, trend analysis, disparity analysis, and inferential statistical techniques to examine healthcare utilization under the PM-JAY-SEHAT scheme. The analytical framework is informed by previous research on PM-JAY that has examined healthcare utilization patterns, geographical and socio-demographic disparities, and equity in scheme coverage (Kaur et al., 2020; Acharya et al., 2023). The application of these complementary statistical techniques enables a systematic assessment of changes in healthcare utilization over time and the identification of disparities across selected demographic and residential groups.

Descriptive and trend analyses are employed to examine the temporal pattern of healthcare utilization during the study period. Annual utilization is calculated for each treatment category and

presented graphically using bar charts to identify increasing, decreasing, or fluctuating trends across the years. To quantify the changes in utilization between consecutive years, the annual growth rate is calculated using the following formula. Annual utilization rates for each treatment category are calculated and presented using bar graphs to identify increasing, decreasing, or fluctuating trends over the study period. The annual growth rate is calculated as:

$$\textbf{Growth Rate} = \frac{value_t - value_{t-1}}{value_{t-1}} \textbf{ x 100}$$

Where value t represents the current year's utilization and Value t−1, represents the utilization in the preceding year. The growth-rate analysis provides an indication of the direction and magnitude of annual changes in healthcare utilization and facilitates comparison of the expansion or decline of different treatment categories over the study period.

Disparity analysis is undertaken to assess differences in healthcare utilization across residential and gender groups. For examining rural-urban disparities, utilization is stratified according to the place of residence of beneficiaries. The urban-rural disproportionality index is calculated as:

$$\textbf{Index} = \frac{proportion\ of\ urban\ beneficiaries\ availing\ treatment}{proportion\ of\ rural\ beneficiaries\ availing\ treatment}$$

An index value greater than 1 indicates relatively higher utilization among urban beneficiaries, whereas a value below 1 indicates relatively higher utilization among rural beneficiaries. An index value equal to 1 indicates parity between the two groups. This measure provides a simple comparative assessment of the extent and direction of geographical disparity in healthcare utilization.

Gender disparities are assessed by comparing healthcare utilization between male and female beneficiaries. The Gender Disparity Index (GDI) is calculated as:

$$\textbf{Index} = \frac{female\ beneficiaries}{male\ beneficiaries}$$

An index value greater than 1 indicates relatively higher utilization among female beneficiaries, while a value below 1 indicates relatively higher utilization among male beneficiaries. An index value equal to 1 represents equal utilization between the two groups. In addition, male-to-female utilization ratios are calculated for individual treatment categories to provide a complementary

measure of gender differences in healthcare utilization. The use of demographic disaggregation is important because geographical and gender-related factors can influence access to and utilization of healthcare services (Balarajan et al., 2011; Dwivedi et al., 2023).

Inferential statistical techniques are employed to determine whether the observed differences in healthcare utilization across selected beneficiary groups are statistically significant. An independent-samples (unpaired) t-test is used to compare the mean healthcare utilization between two independent groups: (i) rural and urban beneficiaries, (ii) male and female beneficiaries, and (iii) beneficiaries aged below 40 years and those aged 40 years and above. The age threshold of 40 years is defined a priori for the purpose of comparison. For each comparison, the null hypothesis (H_0) states that there is no statistically significant difference in mean healthcare utilization between the two groups, whereas the alternative hypothesis (H_1) states that a statistically significant difference exists between the group means.

Before applying the independent-samples t-test, the principal assumptions underlying the parametric test are assessed. The independence of observations is ensured through the study design, as the observations represent separate beneficiary groups. The normality of the utilization data is assessed using the Shapiro–Wilk test, which is particularly appropriate for assessing normality in relatively small samples (Ghasemi & Zahediasl, 2012). For the Shapiro-Wilk test, the null hypothesis (H_0) assumes that the data are normally distributed, whereas the alternative hypothesis (H_1) assumes that the data are not normally distributed. A p-value greater than 0.05 is interpreted as indicating insufficient evidence to reject the null hypothesis of normality, thereby suggesting no statistically significant departure from a normal distribution.

The assumption of homogeneity of variance between the two comparison groups is assessed using Levene's test (Levene, 1960). Where the assumption of equal variances is not satisfied, the Welch independent-samples t-test is considered because it provides a more robust comparison when group variances differ (Brown & Forsythe, 1974). Statistical significance is assessed at the 5% significance level, with a p-value less than 0.05 considered statistically significant. The results of the inferential analysis are interpreted in conjunction with the descriptive, trend, and disparity analyses to provide a comprehensive assessment of healthcare utilization under the PM-JAY-SEHAT scheme. Overall, this analytical framework enables the study to examine temporal

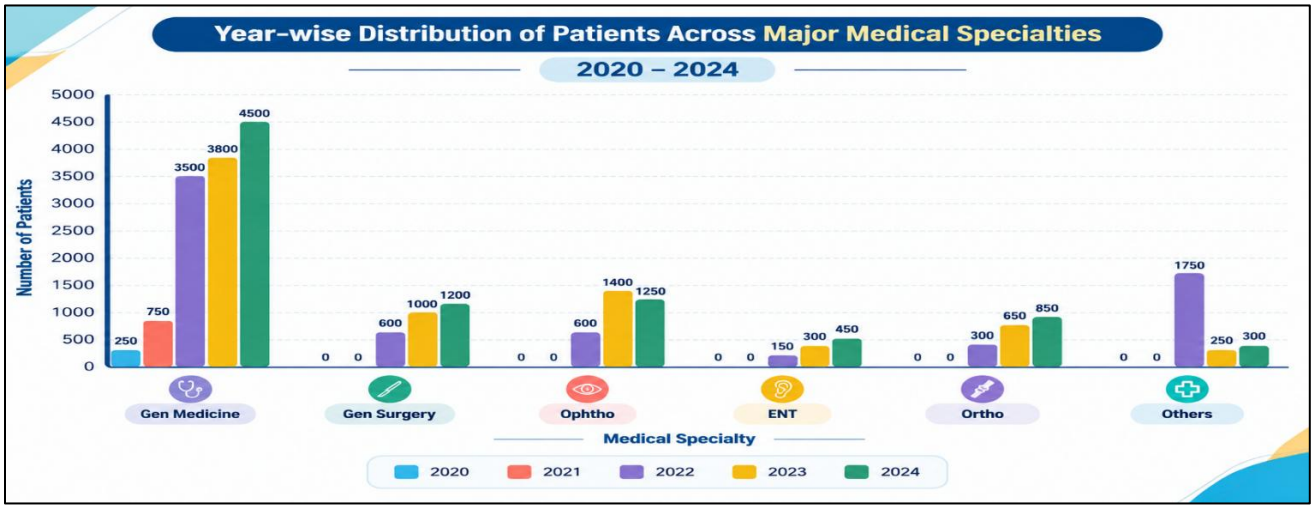
changes in healthcare utilization, quantify rural-urban and gender disparities, and statistically assess differences in utilization across residential, gender, and age groups. The integrated approach therefore provides empirical evidence on the pattern and distribution of healthcare utilization under PM-JAY-SEHAT and contributes to a better understanding of variations in access and utilization among beneficiaries in District Baramulla.

4. Results and Discussion

4.1 Trends in Type of Treatment at GMC Baramulla

The trend in utilization of different treatment categories at Government Medical College (GMC) Baramulla during 2020-2024 is presented in figure 1. The data indicate a substantial increase in utilization across most major treatment categories during the study period.

Figure 1.1: Year-wise Distribution of Patients Across Major Medical Specialties under PM-JAY SEHAT, 2020–2024



Source: Author's compilation based on data from GMC, Baramulla

As reported in Figure 1.1, healthcare utilization across the major treatment categories at GMC Baramulla exhibited an overall upward trend during the study period. General Medicine recorded the most pronounced increase, rising from approximately 250 patients in 2020 to around 4,500 patients in 2024, representing an overall increase of approximately 1,700%. The most substantial rise occurred between 2021 and 2022, when utilization increased sharply from approximately 750 to 3,500 patients. General Surgery also demonstrated a consistent upward trend after 2022, with utilization increasing from approximately 600 cases in 2022 to 1,000 cases in 2023 and further to

1,200 cases in 2024.Ophthalmology similarly recorded a substantial increase, particularly between 2022 and 2023, when utilization rose from approximately 600 to 1,400 cases. However, this increase was followed by a slight decline, with utilization falling to around 1,250 cases in 2024. ENT services exhibited continuous growth after 2022, increasing from approximately 100 cases in 2022 to 300 cases in 2023 and 450 cases in 2024. Orthopedic services followed a comparable upward trajectory, with utilization increasing from around 300 cases in 2022 to approximately 650 cases in 2023 and 850 cases in 2024. In contrast to the other treatment categories, the "Others" category displayed a markedly different pattern. Utilization increased sharply to approximately 1,750 cases in 2022 but subsequently declined substantially to around 200 cases in 2023 before increasing marginally to approximately 300 cases in 2024. Overall, this represents an approximate 83% decline in utilization between 2022 and 2024. Thus, while most major treatment categories at GMC Baramulla demonstrated sustained growth in utilization over the study period, the "Others" category exhibited considerable fluctuations, indicating a distinct pattern compared with the remaining service categories.

4.2 Trends in Type of Surgery at SDH Kreeri Baramulla

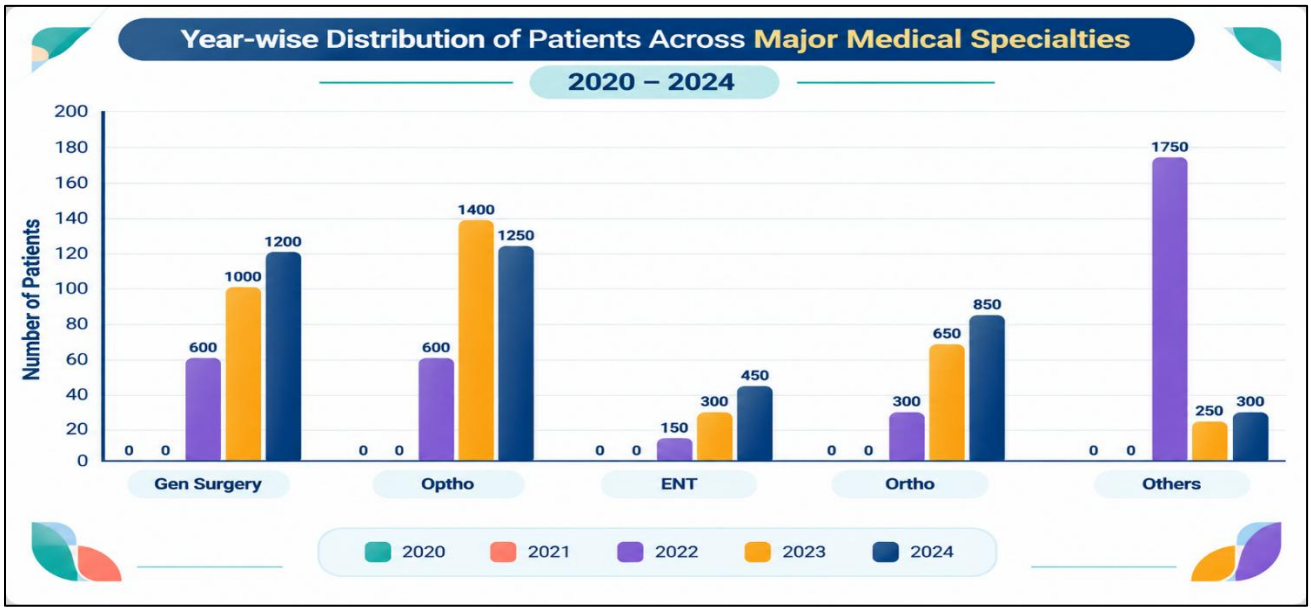
Figure 4.2 below presented the utilization of different surgical treatment categories at Sub-District Hospital (SDH) Kreeri Baramulla during 2020-2024. In contrast to GMC Baramulla, the values at SDH Kreeri are considerably smaller, which is expected given the difference in institutional level and service capacity. Nevertheless, the overall trend indicates increasing utilization of most surgical services.

The findings for SDH Kreeri reveal a steady increase in most categories of surgery. General Surgery increased from approximately 55 cases in 2020 to 190 cases in 2024, representing an increase of about 245%.

The increase was particularly pronounced between 2023 and 2024.Ophthalmology showed a relatively consistent upward trend, increasing from approximately 42 cases in 2020 to 95 cases in 2024, equivalent to an increase of approximately 126%.ENT recorded the highest proportional growth among the major surgical categories, increasing from approximately 22 cases in 2020 to around 100 cases in 2024, representing an increase of approximately 355%. The "Others" category also demonstrated sustained growth, increasing from approximately 52 cases in 2020 to 133 cases in 2024, an increase of approximately 156%. In contrast, orthopedic cases remained

relatively low and stable throughout the study period, fluctuating between approximately 4 and 6 cases annually.

Table 4.2: Year-wise distribution of surgical treatment types at SDH Kreeri Baramulla, 2020-2024



Source: Author's own compilation based on data from SDH Kreeri Baramulla.

The findings from GMC Baramulla and SDH Kreeri indicate a clear expansion in PMJAY-SEHAT service utilization during 2020–2024, although the magnitude and pattern differed across institutions. GMC Baramulla recorded particularly strong growth in General Medicine, General Surgery, Ophthalmology, ENT and Orthopedics, suggesting increasing use of both medical and specialized services. This pattern is broadly consistent with evidence from district hospitals, where General Medicine constitutes a major share of PM-JAY utilization, while surgical and specialty services also account for substantial utilization (Kumar et al., 2023).

The sharp rise in General Medicine at GMC Baramulla may reflect improved access, institutional capacity and beneficiary awareness. Evidence from earlier PM-JAY studies similarly suggests that awareness of scheme entitlements and availability of information can influence utilization (Sriram et al., 2022). More recent evidence from Jammu and Kashmir also identifies awareness of scheme benefits and empaneled hospitals as significant predictors of PM-JAY utilization**.**

At SDH Kreeri, the increase in General Surgery, ENT and Ophthalmology indicates a gradual strengthening of secondary-level services and may suggest reduced dependence on higher-level

institutions for selected procedures. However, the relatively stagnant utilization of Orthopedics indicates that complex cases may continue to be referred to tertiary facilities such as GMC Baramulla. This interpretation is consistent with the broader PM-JAY literature showing that utilization varies considerably according to specialty, institutional capacity and availability of services.

Overall, the institutional evidence suggests that PMJAY-SEHAT has contributed to expanding access to government-provided healthcare, but utilization should not be interpreted solely as an indicator of disease burden. Patient volumes are also shaped by awareness, referral practices, service availability, infrastructure and institutional capacity. This is particularly relevant in Jammu and Kashmir, where recent evidence indicates that informational and physical-access barriers continue to influence effective utilization of PM-JAY services. The results demonstrate a transition from limited scheme utilization in the early years towards broader and more diversified utilization by 2024, with GMC Baramulla functioning as a higher-level centre for large-volume and specialized care, while SDH Kreeri increasingly accommodated selected secondary-level services.

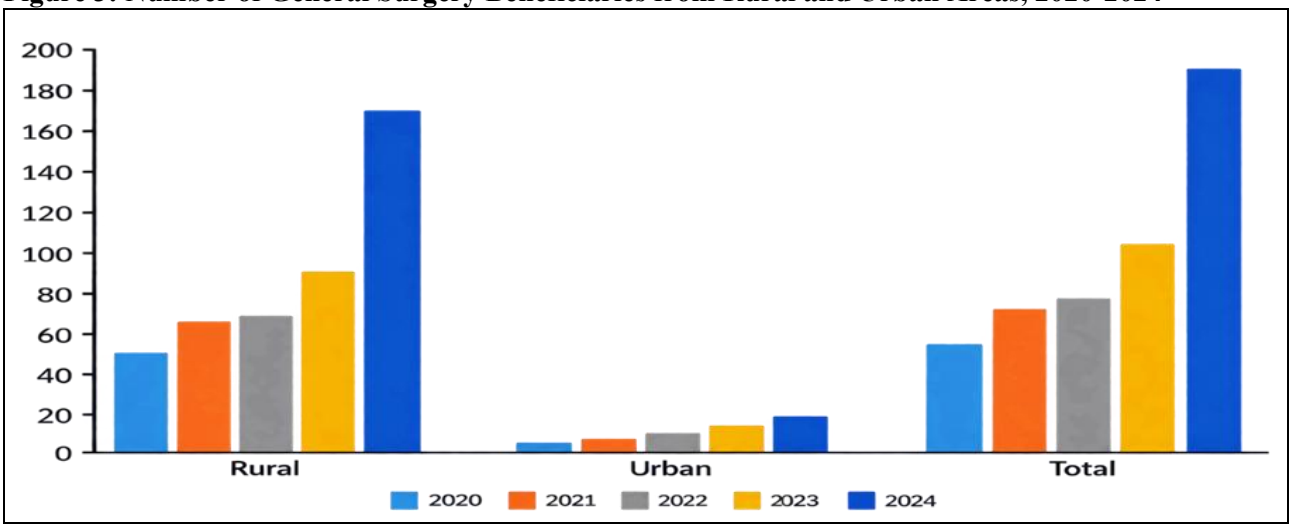
4.3 Results of Rural-Urban Disparity

This subsection examines rural–urban disparities in healthcare utilization by assessing the distribution of beneficiaries accessing treatment across five major categories: general surgery, ophthalmology (optho), otorhinolaryngology (ENT), orthopedics (ortho), and other procedures. Figures from 3-7 illustrate the trends in patient utilization by place of residence, alongside the corresponding total number of beneficiaries accessing services during the study period. The findings indicate an overall upward trend in healthcare utilization among both rural and urban populations across all treatment categories. This increase may reflect the progressive expansion and uptake of the healthcare programme over the study period. However, substantial differences are evident in the distribution of beneficiaries according to their rural or urban residence.

Across the treatment categories presented in figures 3-7, rural beneficiaries consistently account for a larger proportion of the total patients accessing healthcare services compared with their urban counterparts. The predominance of rural beneficiaries is observed both in absolute patient numbers and in their relative contribution to overall programme utilization. Although the increasing trend among both population groups suggests improved access to healthcare services, the persistent

rural-urban differential warrants further examination. These findings may reflect variations in population distribution, healthcare-seeking behaviour, programme awareness, service availability, and the geographical accessibility of healthcare facilities. The observed disparity therefore highlights the importance of examining the underlying socioeconomic and health-system factors influencing healthcare utilization across rural and urban populations. Further assessment of these determinants is essential for developing equitable strategies to ensure balanced access to healthcare services across different residential settings.

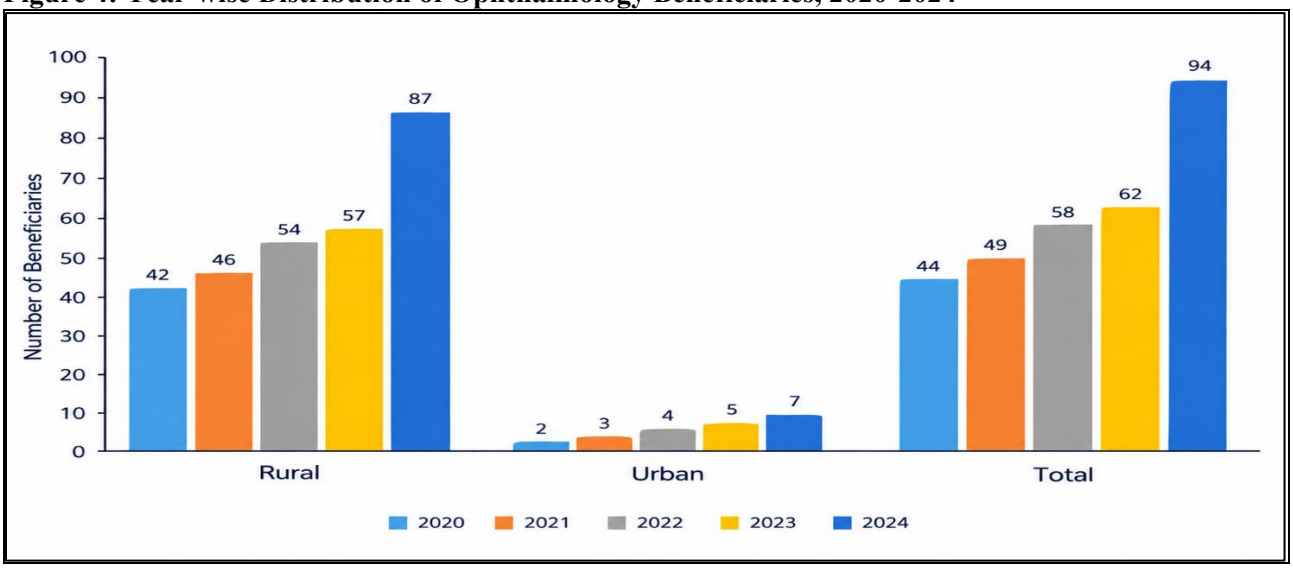
Figure 3: Number of General Surgery Beneficiaries from Rural and Urban Areas, 2020-2024



Source: Author's own compilation based on data from GMC, Baramulla.

The figure 3 showed the year-wise distribution of beneficiaries across rural, urban, and total categories from 2020 to 2024. Rural beneficiaries consistently account for the largest share and show a substantial increase over the study period, while urban beneficiaries remain comparatively low. Overall, the total number of beneficiaries demonstrates a clear upward trend, particularly in 2024. From the figure 3 it can be revealed the rural predominance in general surgery service utilization, with rural beneficiaries increasing substantially over the five-year period. This upward trend may reflect improved healthcare infrastructure, referral systems, and availability of specialized surgical services in rural areas. However, the relatively small urban share and continued rural-urban differences suggest that geographical access, transportation, and financial constraints may still influence utilization of surgical care.

Figure 4: Year-wise Distribution of Ophthalmology Beneficiaries, 2020-2024

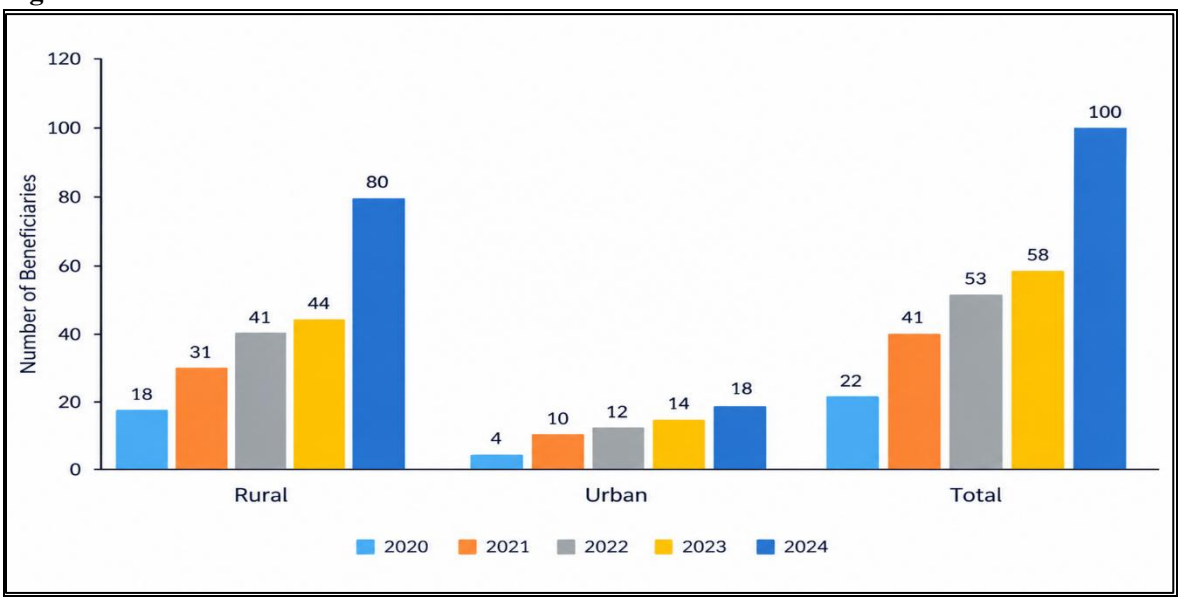


Source: Author's own compilation based on data from GMC, Baramulla.

The figure 4 reports the number of ophthalmology beneficiaries from rural and urban areas from 2020 to 2024. Rural beneficiaries consistently represent the larger share, increasing from 42 in 2020 to 87 in 2024, while urban beneficiaries remain low, rising from 2 to 7. The findings indicate a substantial rural-urban disparity in ophthalmology service utilization, with rural beneficiaries accounting for approximately 95% of total patients. The marked increase in rural utilization may reflect outreach initiatives such as cataract camps and targeted eye-care services. In contrast, the low urban participation may reflect differences in service-seeking patterns and access to alternative private or specialized eye-care facilities.

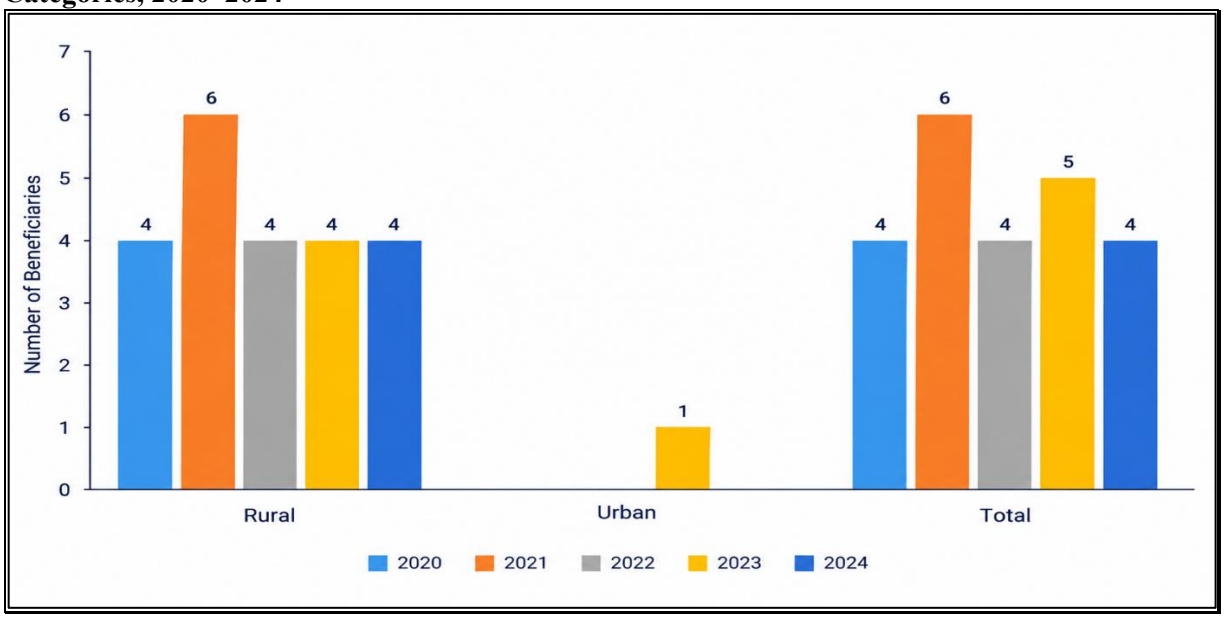
The figure 5 reports the number of ENT service beneficiaries from rural and urban areas from 2020 to 2024. Rural beneficiaries consistently outnumber urban beneficiaries, increasing from 18 in 2020 to 80 in 2024, while urban beneficiaries increased from 4 to 18. Overall beneficiaries increased steadily from 22 to 100 during the study period. The figure demonstrates a marked rural–urban disparity in ENT service utilization, with rural beneficiaries accounting for approximately 80% of total beneficiaries in 2024. The higher rural utilization may be associated with outreach activities and improved access to ENT services and diagnostic facilities. The lower urban participation may reflect greater availability of alternative private services, differences in healthcare-seeking behaviour, or awareness of ENT conditions.

Figure 5: Year-wise Distribution of ENT Service Beneficiaries from Rural and Urban Areas



Source: Author's own compilation based on data from GMC, Baramulla.

Figure 6: Year-wise Distribution of Orthopedic Care Beneficiaries in Rural, Urban, and Total Categories, 2020–2024

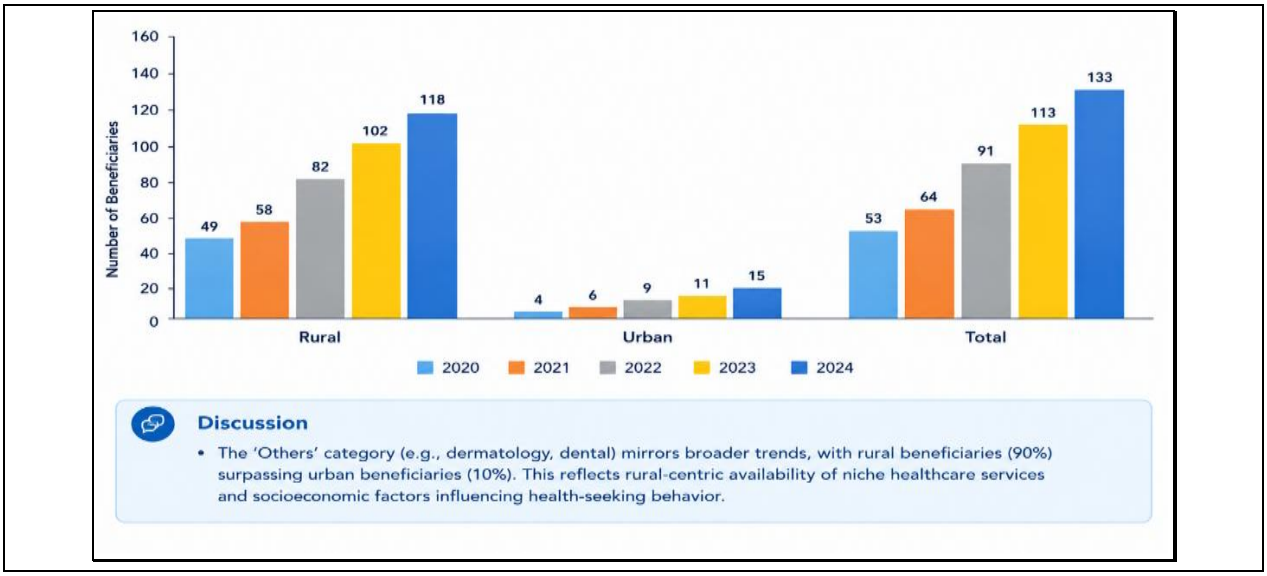


Source: Author's own compilation based on data from GMC, Baramulla.

The figure 6 reports the orthopedic care beneficiaries in rural, urban, and total categories from 2020 to 2024. Rural beneficiaries remain consistently higher, with a notable increase in 2021, while urban utilization is very low throughout the period. The findings indicate a substantial rural-urban disparity, with rural beneficiaries accounting for approximately 96% of the total compared

with 4% from urban areas. The higher rural utilization may reflect greater dependence on public orthopedic services, while urban patients may have better access to private hospitals, trauma centers, and rehabilitation facilities

Figure 7: Year-wise Distribution of Beneficiaries in the "Others" Healthcare Category across Rural, Urban, and Total Areas, 2020–2024



The figure 7 illustrates the distribution of beneficiaries in the "Others" healthcare category across rural, urban, and total populations from 2020–2024. Beneficiary numbers increased progressively over the study period, with rural areas consistently recording substantially higher utilization than urban areas. The findings demonstrate a pronounced rural–urban disparity, with rural beneficiaries accounting for approximately 90% compared with 10% from urban areas. This pattern may reflect differences in the availability of specialized services, healthcare-seeking behaviour, and socioeconomic conditions, highlighting the need for equitable access to diverse healthcare services.

4.4 Results of Rural-Urban and Gender Disparities in Healthcare Utilization

The independent two-sample *t*-test indicates a statistically significant difference in healthcare utilization between rural and urban beneficiaries. The mean utilization was substantially higher among rural beneficiaries (55.32) than urban beneficiaries (6.68), with a mean difference of 48.64. The test yielded a *t*-value of 6.75 and a *p*-value of 0.00 ($p < 0.001$), indicating a highly significant

difference between the two groups. The findings demonstrate a pronounced geographical disparity in healthcare utilization, with rural beneficiaries recording considerably higher utilization than their urban counterparts. This difference may reflect greater reliance of rural populations on the PM-JAY SEHAT scheme for accessing healthcare services, while urban beneficiaries may have greater access to alternative healthcare providers and facilities. Overall, the result highlights the unequal pattern of healthcare utilization across rural and urban populations.

Table 1: Shapiro-Wilk W test for normal data

	Obs.	W	V	Z	$p > Z$
Rural	25	0.93054	1.930	1.344	0.08944
Urban	25	0.92819	1.996	1.412	0.07892

Source: Author's compilation

Table 2: Independent Two-Sample *t*-Test Results for Rural–Urban Differences in Healthcare Utilization

	Obs	Mean__rural	Mean_urban	Dif.	St Err	*t*-value	*p*-value
rural – urban	25	55.32	6.680	48.64	7.227	6.75	0.00

Source: Author's compilation

Table 3: Shapiro-Wilk Test for Normality of Male and Female Healthcare Utilization Data

	Obs.	W	V	Z	$p> Z$
Male	30	0.730	1.586	1.46	0.74
Female	30	0.667	1.591	1.880	0.69

Source: Author's Calculation

The Shapiro-Wilk test as indicated in the table 3 revealed that both male ($W = 0.730$, $p = 0.74$) and female ($W = 0.667$, $p = 0.69$) healthcare utilization data are approximately normally distributed. Since both *p*-values are greater than 0.05, the null hypothesis of normality is not rejected. The results confirm that the male and female utilization data satisfy the normality assumption required for parametric analysis. Therefore, an independent two-sample *t*-test can be appropriately applied to assess whether a statistically significant difference exists in healthcare utilization between male and female beneficiaries.

Table 4: Independent Two-Sample t-Test Results for Gender Differences in Healthcare Utilization

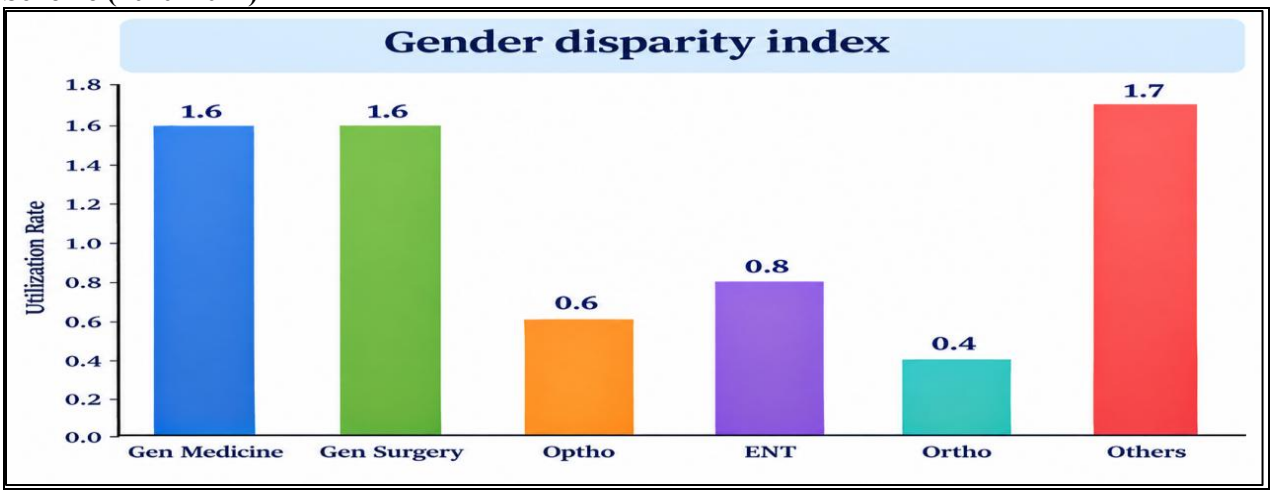
	Obs.	Mean_male	Mean_female	Diff.	St Err.	*t* value	*p*-value
male - female	30	355.666	471.00	-115.33	60.134	-2.9	0.05

Source: Author's Calculation

The independent two-sample *t*-test as reported in table 4 shows that mean healthcare utilization was higher among female beneficiaries (471.00) than male beneficiaries (355.67), with a mean difference of -115.33. The *t*-value was -2.9 with a *p*-value of 0.05, indicating a statistically significant gender difference at the 5% level.

The findings indicate greater healthcare utilization among female beneficiaries compared with males. This gender disparity may reflect differences in healthcare needs, disease patterns, and healthcare-seeking behaviour. The result highlights the importance of considering gender-specific patterns when assessing healthcare utilization under PM-JAY SEHAT.

Figure 8. Gender Disparity Index Across Healthcare Service Categories under the PM-JAY SEHAT Scheme (2020–2024)

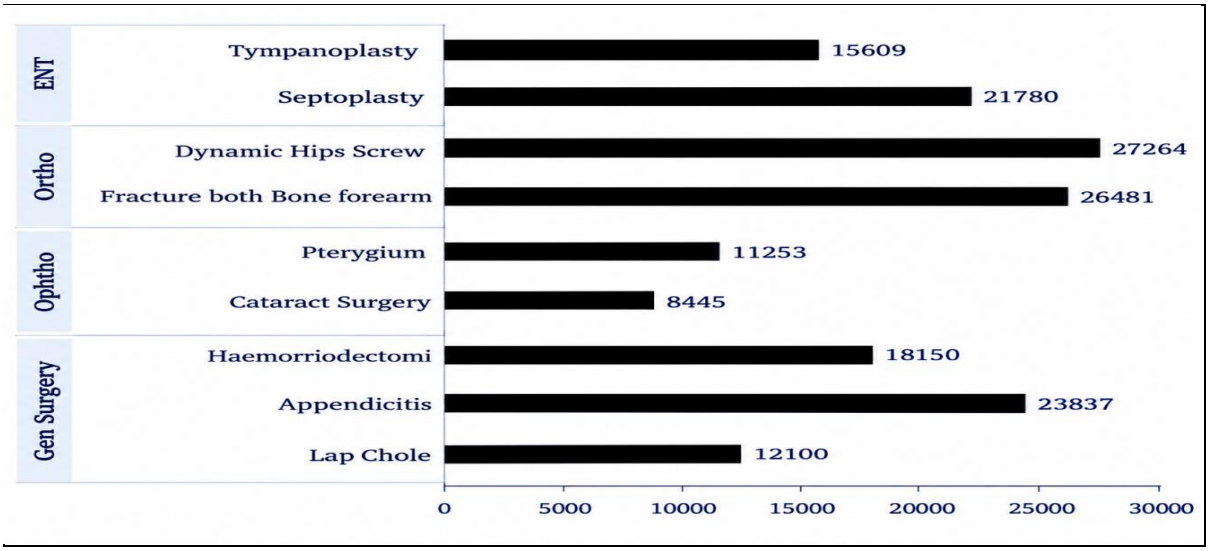


Source: Author's Calculation

Figure 8 presents the Gender Disparity Index (GDI) across different categories of medical treatments availed under the PM-JAY SEHAT scheme. The index, calculated as the average female-to-male utilization ratio for each treatment category, indicates female dominance when the value is ≥ 1 and male dominance when the value is < 1. General Medicine (1.6), General Surgery (1.6), and the others category (1.7) exhibit index values above unity, suggesting relatively higher utilization by women, which may be attributed to the gender-specific healthcare needs and service

demand within these categories. In contrast, Ophthalmology (0.6), ENT (0.8), and Orthopedics (0.4) record index values below one, indicating greater utilization by men. Overall, the findings demonstrate that gender disparities in healthcare utilization vary considerably across treatment categories, reflecting differences in disease patterns, healthcare-seeking behaviour, and the nature of services required. These results highlight the importance of adopting gender-responsive healthcare planning to address disparities in specialties where utilization remains uneven while ensuring equitable access to healthcare services under the PM-JAY SEHAT scheme**.** Similarly, 9 reports the variation in financial expenditure across different medical specialities covered under the PM-JAY SEHAT scheme at GMC Baramulla. The expenditure differs substantially across specialities, ranging from relatively low-cost, high-volume procedures such as cataract surgery to more costly and complex procedures, particularly orthopaedic interventions. From the figure 9 it can be observed variation in expenditure reflects differences in the complexity, resource requirements, and treatment costs associated with different medical specialities. Despite these variations, the PM-JAY SEHAT scheme demonstrates its continued role in providing financial protection and improving access to healthcare services for beneficiaries, particularly by reducing the economic burden associated with costly medical procedures. Overall, the findings indicate the scheme's contribution towards promoting more equitable access to healthcare.

Figure 9: Results of financial expenditure across the different medical specialties covered under the PM-JAY SEHAT scheme at GMC Baramulla



Source: Author's Calculation

5. Policy Conclusion

The findings of the present study provide important policy insights into the implementation and effectiveness of the Ayushman Bharat Pradhan Mantri Jan Arogya Yojana–SEHAT (AB-PMJAY-SEHAT) scheme in District Baramulla. The observed increase in healthcare utilization across Government Medical College (GMC) Baramulla and Sub-District Hospital (SDH) Kreeri during the period 2020–2024 indicates that the scheme has substantially expanded access to secondary and tertiary healthcare services. The continuous rise in the utilization of General Medicine, General Surgery, Ophthalmology, ENT, and Orthopaedic services suggests that the scheme is progressively strengthening healthcare access and contributing towards the objectives of Universal Health Coverage (UHC). However, the statistical analysis demonstrates that improvements in overall utilization have not translated into equitable access across all population groups. The independent-samples t-test revealed a highly significant rural–urban difference in healthcare utilization ($t = 6.75$, $p < 0.001$), indicating substantially higher utilization among rural beneficiaries than their urban counterparts. While this finding reflects the scheme's success in reaching rural populations, it also suggests the need to investigate whether lower urban utilization results from greater dependence on private healthcare providers, differences in healthcare-seeking behaviour, or inadequate awareness of scheme benefits among urban residents. Future policy interventions should therefore focus on ensuring balanced utilization across both rural and urban populations through targeted awareness campaigns, improved beneficiary outreach, and stronger integration of empaneled healthcare facilities.

Similarly, the analysis identified statistically significant gender differences in healthcare utilization ($t = -2.90$, $p = 0.05$), with female beneficiaries demonstrating higher overall utilization than males. Nevertheless, the Gender Disparity Index revealed considerable variation across medical specialties, with female predominance in General Medicine, General Surgery, and other services, whereas male utilization remained higher in Ophthalmology, ENT, and Orthopedics. These findings indicate that healthcare utilization under PMJAY-SEHAT is influenced by specialty-specific health needs and healthcare-seeking behaviour rather than uniform gender differences. Policymakers should therefore adopt gender-responsive healthcare planning by designing targeted health promotion strategies and ensuring equitable access across all clinical specialties.

The results further indicate that tertiary healthcare institutions such as GMC Baramulla continue to function as the primary centres for specialized care, while secondary-level hospitals such as SDH Kreeri have gradually expanded their service delivery capacity. This pattern highlights the need for continued strengthening of district and sub-district healthcare infrastructure, including investment in specialist human resources, diagnostic facilities, surgical equipment, and referral systems. Strengthening lower-level health facilities would reduce unnecessary referrals to tertiary hospitals, improve service efficiency, and enhance geographical accessibility for beneficiaries residing in remote areas.

The study also suggests that increased utilization alone should not be interpreted as a complete indicator of programme success. Sustainable improvements in healthcare outcomes require parallel investments in service quality, institutional capacity, digital health systems, beneficiary awareness, and monitoring mechanisms. Continuous evaluation of utilization patterns, financial protection, quality of care, and beneficiary satisfaction should therefore become an integral component of PMJAY-SEHAT implementation. Overall, the evidence indicates that AB-PMJAY-SEHAT has made a significant contribution towards improving healthcare accessibility and financial protection in District Baramulla. Nevertheless, achieving the broader objective of Universal Health Coverage requires policy measures that address remaining geographical, gender, institutional, and specialty-specific disparities. Strengthening health infrastructure, expanding awareness initiatives, improving service quality, and ensuring equitable distribution of healthcare resources will be essential for maximizing the long-term effectiveness and sustainability of the scheme.

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