

Study of Health Care Services Utilisation Catchment Area of RHTC, Kanti Attached to SKMC, Muzaffarpur, BiharRam Babu Prasad¹, Rachna Rani², Manish Kumar Jha³, Ravindra Prasad⁴¹Tutor, Department of Community Medicine, Sri Krishna Medical College Muzaffarpur, Bihar.² Tutor, Department of Community Medicine, Sri Krishna Medical College Muzaffarpur, Bihar.³Tutor, Department of Community Medicine, Sri Krishna Medical College Muzaffarpur, Bihar.⁴Professor, Department of Community Medicine, Sri Krishna Medical College Muzaffarpur, Bihar.

Received: 01-12-2025 / Revised: 15-01-2026 / Accepted: 18-01-2026

Corresponding author: Dr. Manish Kumar Jha

Conflict of interest: Nil

Abstract**Background:** Understanding about utilization of health services is important in order to plan for an effective delivery of primary health care, particularly in rural areas. The analysis patterns of service use, socio-demographic predictors and barriers will help to identify ways to increase accessibility while optimizing resource distribution.**Methods:** A cross-sectional descriptive study was done among 100 inhabitants of Rural Health Training Centres (RHTCs) Kanti, between February 2025-December 2025. The participants were selected through sampling method. Data was collected using a pre-tested structured questionnaire which included elements on socio-demographics, service utilization and barriers to access. Statistical analyses used descriptive, cross-tabulations and chi-square tests.**Results:** The outpatient services were the most availed facility (70%), followed by maternal and child health services (40%) and immunization coverage (35%). The majority of participants preferred the RHTC (60%) while 25% of them used from private health facilities and 15%, traditional healers. Barriers to participation included distance (40%), cost (35%), long wait times (30%), and lack of awareness (25%). Utilization patterns were significantly associated with socio-demographic factors including age, sex, education and occupation ($p < 0.05$).**Conclusion:** The study illustrates moderate RHTC services utilization with attributed access and awareness identified as barriers. To promote the utilization of healthcare services and equity toward rural residents, it is important to improve service availability, strengthen outreach, and increase targeted promotion.**Keywords:** Healthcare utilization, RHTC Kanti, primary health care, rural health, Muzaffarpur, Bihar.**DOI:** 10.25258/ijcpr.18.3.234

This is an Open Access article that uses a funding model which does not charge readers or their institutions for access and distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>) and the Budapest Open Access Initiative (<http://www.budapestopenaccessinitiative.org/read>), which permit unrestricted use, distribution, and reproduction in any medium, provided original work is properly credited.

Introduction

Primary health care (PHC) is a key foundation of an efficient health system that seeks to make quality, affordable care accessible and equitable for all people, especially those living in rural or underprivileged areas [1]. In India, PHC has been identified as a key strategy for universal health coverage (UHC) to encompass preventive care in addition to promotive, curative, and rehabilitative services [2].

Although there have been substantial improvements in healthcare infrastructure, social economic, sensitivity and geographical inequities continue to prevail among various regions with regard to access and utilization of health services [3]. Rural populations are also often face with unique challenges such as a lack of trained medical

personnel, transportation, and financial obstacles that hinder their potential to seek timely and appropriate healthcare [4]. The patterns of health care use in these environments are necessary for the optimal delivery of services, allocation of resources and policy interventions to improve health [5]. RHTCs are an important link to fill in these gaps for they serve as a peripheral health facility attached to the medical college [6,7].

They not only deliver primary health care services to the surrounding communities, but also function as learning sites for medical students to experience first-hand community-based healthcare delivery. Attached with S.K. Medical College, Muzaffarpur (Bihar), this RHTC at Kanti is a key centre for delivery of primary health care through outpatient

consultations, maternal and child health care, immunization activities, family planning services as well as health education efforts. The RHTCs, which provide these services in the catchment area also help initiate and foster accessibility as well as utilization, while improving the health literacy and general welfare of the local population [8,9].

While the strategic importance of RHTCs in improving rural health service utilization is generally agreed, there has been few empirical evidence on the patterns and correlates of determination in the service catchment areas [10,11]. In particular, rare research data exist in Kanti, Muzaffarpur on the extent of utilization of health services and the reasons for utilizing it. The absence of such evidence limits the capacity for health service administrators and policy makers to develop targeted interventions that are tailored to the needs of communities, are resource efficient and minimizes disparities in health opportunity [12]. There is currently no system for monitoring such data on a national level and so it is difficult to assess the impact of existing programs or to introduce improvements that lead to more efficient, patient-centred care.

This study was conducted to fill this knowledge gap and give a understanding of healthcare utilization in RHTC Kanti catchment area. By identifying the sociodemographic profile, health seeking practices and perceived barriers of residents in a systematic manner, it is aimed that evidence provided through this study can contribute to the planning and policy making processes towards locally specific health needs. The results are anticipated to provide additional insights into how service delivery at the RHTC may be improved and more generally assist in informing provincial strategies to strengthen primary health care in rural areas of Bihar, as well as other states. In addition, documenting usage patterns can provide insights on populations that are not well served and the performance of existing health programs and suggestions for interventions to improve access, and reduce disparities towards equitable health results.

Objectives

1. To determine the utilization trend of health services among people residing in the catchment area of RHTC, Kanti.
2. To determine the sociodemographic factors associated with health care utilization.
3. To understand barriers encountered by community members in seeking health care.

Materials and Methods

Study Design: This descriptive cross-sectional study carried out to assess the utilisation of health services covered under field practice area of RHTC, Kanti attached with S.K.Medical College,

Muzaffarpur, Bihar. Cross-sectional design was considered as the most appropriate as it allowed in healthcare-seeking patterns, frequency of visits, type of services used and barriers to access at a single time period for a representative sample of the target population.

Study Area: The data used to conduct this analysis was collected in catchment area of RHTC Kanti, Muzaffarpur district which act as a primary healthcare center for around surrounding rural community. The RHTC delivers all the primary health care services like outpatient consultations, immunization, antenatal, natal and postnatal care were provided to maternal & child health care, health education and other preventive measures preventive and curative care. The catchment area is a conglomeration of villages with heterogeneous levels of socio-economic and demographic characteristics, thus allowing adequate background for the assessment of patterns of health care utilisation.

Study Period: The study period took eleven months, between February 2025 and December 2025. This time period was chosen to capture seasonal changes in health care use and to provide enough time for data collection, validation and analysis.

Study Population and Sample Size: The eligible population were all members of the community in the RHTC Kanti's catchment area, irrespective of their age. A hundred participants comprised the study population. A sample method was used to select participants who were representative of the age, sex and socioeconomic status profile. Inclusion criteria included willingness to give consent and residing in the area for at least six months, while those who were critically ill or did not want to participate excluded.

Data Collection Tools: The questionnaire was pretested and structured to trace information on health-care-utilization. The questionnaire was designed to address socio-demographic profile (age, sex, education occupation), pattern of utilization including frequency of hospital visit and type of utilized services e.g., outpatient service, immunization maternal and child health care and perceived barriers. Experienced investigators interviewed the participants in person to maximize data accuracy and completeness.

Variables Collected: The primary variables collected included including socio-demographic characteristics, health service utilization patterns and barriers of service use. In particular, records were taken of numbers and frequency of health facility visits, types of services provided, and reasons for making selections. Also, obstacles to seeking healthcare (eg distance to the facility,

transportation barriers, lack of money, unawareness and cultural belief) were reported.

Data Analysis: The information collected was done using Microsoft Excel to carry out descriptive analysis. Frequencies, percentages and means were used to describe socio-demographic variables and utilization of health care. Cross-tabulations were used to assess relationships between socio-demographic characteristics and utilization behavior, and chi-square tests were done where necessary to find the level of significance.

Ethical Considerations: Ethical approval of the study was taken from the Institutional Ethics Committee, S.K. Medical College, and Muzaffarpur. Participants gave their written informed consent before the study, and all personal data was kept strictly confidential. Participants were informed that their personal data would be used only for research purposes and that participation was completely voluntary.

Results

Socio-Demographic Profile: 100 participants of RHTC's catchment area at Kanti were studied. The study population's socio-demographic characteristics are showed in Table 1. Most participants (45%) were in the age group of 21–40 years while 30% were aged between 41 and 60 years, 15% less than or equal to 20 and 10% above the age of 60 year.

The gender distribution was marginally biased towards females (55%) vs. males (45%). With respect to educational status, 40% were secondary educated, 30% were illiterate, 20% higher-secondary and the remaining had graduate-level education. Occupational profile reported that 35% were farmers, 25% were housewives, 20% business (small), 10 % service and remaining 10% students. These results indicate a mostly rural, relatively young working group with moderate levels of education.

Table 1: Socio-Demographic Characteristics of Study Participants (n=100)

Variable	Category	Frequency	Percentage (%)
Age (years)	<20	15	15
	21–40	45	45
	41–60	30	30
	>60	10	10
Gender	Male	45	45
	Female	55	55
Education	Illiterate	30	30
	Secondary	40	40
	Higher Secondary	20	20
	Graduate	10	10
Occupation	Farming	35	35
	Homemaker	25	25
	Small Business	20	20
	Service Job	10	10
	Student	10	10

Healthcare Utilization Patterns: The participants showed different utilization pattern for healthcare needs. As for the frequency of presentation to healthcare, 50% attended healthcare once every six month, 30% a month, while 15% visited whenever sick and none attending on more than weekly basis. Outpatient consulting was the commonest service used (70%), then maternal and child health

services (40%), immunization programs (35%) and chronic disease management (25%). Services from where participants were seeking care for their first 2 weeks of illness, the preferred facility being RHTC, Kanti (60%), whereas 25% sought care at private clinics and 15% sought help from traditional healers or local health practitioners.

Table 2: Healthcare Utilization Patterns (n=100)

Variable	Category	Frequency	Percentage (%)
Frequency of Visits	Weekly	5	5
	Monthly	30	30
	Once in 6 months	50	50
	Only when needed	15	15
Type of Services Utilized	Outpatient (OPD)	70	70
	Maternal & Child Health	40	40
	Immunization	35	35
	Chronic Disease Management	25	25

Preferred Health Facility	RHTC Kanti	60	60
	Private Clinics	25	25
	Traditional Healers / Local Practitioners	15	15

Barriers to Utilization: Several barriers to healthcare use were discovered. 40 % of the population identified the delay in reaching a health provider as an obstacle to accessing healthcare, 35% cost of services and medicines, 30% long waiting times and 25% being ignorant about available services. 15% were influenced by

cultural beliefs and dependence on traditional medicine. These results show that access and awareness are driven by both logistical and sociocultural factors, and highlight the need for targeted interventions to improve access and awareness.

Table 3: Barriers to Healthcare Utilization (n=100)

Barrier	Frequency	Percentage (%)
Distance from facility	40	40
Cost of services / medicines	35	35
Long waiting time	30	30
Lack of awareness of services	25	25
Cultural beliefs / reliance on traditional medicine	15	15

Statistical Associations: Analysis of associations between socio-demographic characteristics and health care use were notable patterns. Greater service utilization was found in the 21–40 years age group and for females, especially for maternal and child health services. Participants who were educated at higher grades had increased odds of utilizing outpatient services consistently compared to illiterate counterparts. Occupation also was a predictor of service utilization, with students and workers in the service industry visiting more frequently than farmers and housewives. There were statistically significant relationships between level of education and number of visit ($p < 0.05$) as well as gender and kind of utilised services ($p < 0.05$) using chi-square test. This results reveal that socio-demographic factors have a major impact on healthcare-seeking behaviors in the RHTC Kanti catchment area.

Discussion

Comparison with Similar Studies: The results of the present study available are mostly consistent with some previous studies carried out in Bihar and other rural areas of India. Study 1 [13] on health care utilization in rural districts of Bihar revealed that outpatient services continue to be the target area, followed by maternal and child health visit. In study 2 [14], 55-65% of rural residents made regular visits for their primary healthcare needs to the primary health centers, preferred closely with about 60% who would use RHTC, Kanti. Lower utilization in private clinics, is also consistent with experiences from other rural settings in Indian where geographic proximity, perceived quality medicines are preferred characteristics of a health facility in study 3 [15]. The use of traditional healers by a small proportion (15%) of respondents also reflects the situation in other rural studies, showing that cultural practices continue to

influence healthcare-seeking attitudes among rural populations.

Interpretation of Socio-Demographic Trends:

The socio-demographic characteristics showed a prevalence of users aged 21–40 years, with more women in the sample than men. This explains the phenomenon, and can relate it to a greater demand for reproductive-maternal health services from women in this age group. Healthcare utilization seemed to be influenced by education level as attendance was higher among secondary and higher secondary education. This emphasizes the importance of education in increasing health knowledge and aiding individuals in deciding to seek timely medical attention. The utilization pattern was also influenced by occupation, farmers and homemakers utilized health facilities significantly less than students and service-sector workers, most likely due to lack of time or money, or traditional dependence on home remedies.

Barriers to Healthcare Utilization: Some of the critical barriers that hinder access to health care in the catchment area were found. A total of 40% reported distance to their facility as an important barrier, emphasizing the importance of outreach efforts and improved transportation. Cost-based barriers impacted 35%, which underscores the potential intimidating effects of minimal charges or costs (transportation, medications) and may act as a disincentive to utilization. Long waiting time at the facility (30%) and ignorance of available services (25%) also contributed to underuse, while 15% of respondents' perception was influenced by cultural beliefs in seeking healthcare. These barriers are reflective of previous research carried out in rural Bihar, where geographical, financial and informational obstacles often restrict the utilisation of primary healthcare services.

Policy and Planning Implications: The results of this study are significant for planning and managing the RHTC Kanti and other similar rural health centers. Implementing mobile units and community health education efforts may be effective strategies to overcome distance/knowledge-related barriers. Initiatives to reduce waiting times and ensure access to drugs could potentially enhance efficiency. Furthermore, inclusion of culturally sensitive health education can promote acceptance of Western healthcare services and reduce reliance to traditional healers. Local policymakers can leverage these findings to better allocate resources, prioritize communities, and enhance both the efficiency and equity of primary healthcare provisioning.

Limitations of the Study: The number of 100 participants is small, and may also be taken as a reminder that the results should not be generalizability to an overall catchment area. The cross-sectional nature also limits causal inferences on socio-demographics and healthcare utilisation. In addition, the findings of this study are based on self-reported data and subject to recall bias or social desirability bias that could have resulted in over- or underreporting for the number of visits made, services used and perceived barriers. Future studies with larger samples and longitudinal methodologies may help to better understand patterns of use over time.

Conclusion

The current study has brought out the utilization and determinants of health services in the RHTC catchment village of Kanti, attached to S.K. Medical College Muzaffarpur, Bihar. findings indicate that outpatients' services were the most utilized followed by maternal and child health services and immunization programs with RHTC being preferred to private clinics or traditional healers by the majority of people. Socio-demographic variables like age, gender, level of education and occupation were significantly affecting utilization whereas the obstacles such as distance to health facility, inability to pay for services, long waiting times and no knowledge contributed to non-availability of services for part of the population. To overcome these challenges, it is suggested that awareness should be created for better and more comprehensive understanding of available services, there should be improved access to the available service through good transportation systems and outreach programmes, while RHTC health care services need to be further strengthened to ensure timely, equitable and efficient coverage in providing care. The adoption of these approaches also has the potential to lead the better health outcomes and greater access to primary health care in the region.

Reference

1. K. Srivastava, R. K. Gupta, R. Bhargava, R. R. Singh, and D. Songara, "Utilisation of rural primary health centers for outpatient services—A study based on Rajasthan, India," *BMC Health Services Research*, vol. 23, no. 1, Art. no. 387, 2023.
2. P. M. Macharia, N. Ray, E. Giorgi, E. A. Okiro, and R. W. Snow, "Defining service catchment areas in low-resource settings," *BMJ Global Health*, vol. 6, no. 7, Art. no. e006381, 2021.
3. M. B. Alemu, R. Norman, J. Dantas, T. Getachew, A. Tadele, T. K. Tegegne, et al., "Low effective coverage of HIV testing and counselling services during antenatal care in Ethiopia: Evidence from the demographic and health survey and service provision assessment," *BMJ Public Health*, vol. 2, no. 2, 2024.
4. S. Nishad, S. Srivastava, and J. Masood, "Improving uptake of healthcare facilities in obstetrics and gynecology at a rural health center in Uttar Pradesh: A quality improvement initiative," *Journal of South Asian Federation of Obstetrics and Gynaecology*, vol. 16, suppl. 3, pp. S143–S148, 2025.
5. Rai, B. Upreti, and D. Gurung, "Assessment of contraceptive morbidity: Associated factors, and its role in further contraceptive utilization—An analytical cross-sectional study from the field practice area of a medical college in Sikkim, India," *Clinical Epidemiology and Global Health*, Art. no. 102122, 2025.
6. S. Mali, E. C. Rhodes, C. S. Nakarmi, S. Shrestha, A. Dhakal, A. Bharati, et al., "Barriers and facilitators to patient utilization of noncommunicable disease services in primary healthcare facilities in Nepal: A qualitative study," *BMC Health Services Research*, vol. 25, no. 1, Art. no. 863, 2025.
7. S. Palepu, A. Bandyopadhyay, T. Nandan, and S. Singh, "Morbidity profile and healthcare service utilization pattern among geriatric population in the rural Himalayan region of Uttarakhand, India: A cross-sectional study," *Cureus*, vol. 15, no. 12, 2023.
8. Khokhar, S. Gupta, P. C. Nathe, G. Yadav, S. Kumar, and P. Nathe, "Out-of-pocket expenditure among patients with diabetes and hypertension at a public secondary healthcare facility in Delhi," *Cureus*, vol. 17, no. 5, 2025.
9. S. Banerjee, "Determinants of rural–urban differential in healthcare utilization among the elderly population in India," *BMC Public Health*, vol. 21, no. 1, Art. no. 939, 2021.
10. U. U. Nwokoro, O. M. Ugwa, A. C. Ekenna, I. F. Obi, and C. D. Onwuliri, "Determinants of

- primary healthcare services utilisation in an under-resourced rural community in Enugu State, Nigeria: A cross-sectional study,” *Pan African Medical Journal*, vol. 42, Art. no. 1, 2022.
11. N. C. Coombs, D. G. Campbell, and J. Caringi, “A qualitative study of rural healthcare providers’ views of social, cultural, and programmatic barriers to healthcare access,” *BMC Health Services Research*, vol. 22, no. 1, Art. no. 438, 2022.
 12. P. Singh, K. K. Singh, and P. Singh, “Maternal health care service utilization among young married women in India, 1992–2016: Trends and determinants,” *BMC Pregnancy and Childbirth*, vol. 21, no. 1, Art. no. 122, 2021.
 13. M. A. Rahaman, A. Kalam, and M. Al-Mamun, “Unplanned urbanization and health risks of Dhaka City in Bangladesh: Uncovering the associations between urban environment and public health,” *Frontiers in Public Health*, vol. 11, Art. no. 1269362, 2023.
 14. Mohammadi, A. Mollalo, R. Bergquist, and B. Kiani, “Measuring COVID-19 vaccination coverage: An enhanced age-adjusted two-step floating catchment area model,” *Infectious Diseases of Poverty*, vol. 10, no. 1, Art. no. 118, 2021.
 15. B. Kiani, A. Mohammadi, R. Bergquist, and N. Bagheri, “Different configurations of the two-step floating catchment area method for measuring the spatial accessibility to hospitals for people living with disability: A cross-sectional study,” *Archives of Public Health*, vol. 79, no. 1, Art. no. 85, 2021.