A Study on the Accessibility and Quality of Healthcare Services in Chamarajanagar District

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***Abstract*—This study examines the accessibility and quality of healthcare services in Chamarajanagar District, Karnataka, focusing on patient experiences and identifying gaps in service delivery. Utilizing primary data collected from 100 respondents across various healthcare centers, the research analyzes demographic characteristics, accessibility, facility quality, and overall satisfaction. The findings reveal notable disparities in both access and service quality among different types of healthcare centers. While private clinics, urban health centers, and community health centers received higher satisfaction ratings and were perceived to provide superior services, government hospitals and primary health centers were often rated as average, with many respondents reporting limited accessibility and moderate satisfaction. Chi-square analysis confirms a significant association between the type of healthcare center and patient experiences. The study highlights the urgent need for targeted improvements to public healthcare infrastructure, service quality, and accessibility, particularly in primary health centers, to ensure equitable and satisfactory healthcare outcomes for all district residents.**

***Index Terms*—Healthcare Accessibility, Service Quality, Patient Satisfaction, Primary Health Centers, Public Healthcare, Healthcare Infrastructure, Healthcare Disparities**

I. INTRODUCTION

Healthcare is a fundamental component of human development and plays a vital role in improving quality of life, productivity, and a nation's socioeconomic progress. India has developed a vast public healthcare system comprising primary, secondary, and tertiary levels of care to provide accessible and affordable medical services to its population. According to the Ministry of Health and Family Welfare's Health Dynamics of India 2022–23 Report, as of March 2023, India had 1,69,615 Sub-Centres, 31,882 Primary Health Centres (PHCs), 6,359 Community Health Centres (CHCs), 714 District Hospitals, and 362 Medical Colleges. These facilities were supported by 40,583 doctors at PHCs, 26,280 specialists and medical officers at CHCs, and 2,39,911 health workers at Sub-Centres, reflecting the government's efforts to strengthen healthcare accessibility across the country.

Despite significant expansion of healthcare infrastructure, disparities in accessibility and quality persist between urban and rural regions. The availability of healthcare professionals, diagnostic facilities, and specialized services remains inadequate in many areas. The Health Dynamics of India 2022–23 Report reveals that rural India faced a shortfall of 17,551 specialist doctors at Community Health Centres (CHCs), with only 4,413 specialists available against the required 21,964, resulting in a shortage of nearly 79.9 percent. These deficiencies undermine the quality of healthcare services and limit access to specialized treatment, particularly for rural and economically disadvantaged populations. Therefore, evaluating healthcare accessibility and quality is essential for identifying gaps and improving service delivery.

Karnataka is one of India's more advanced states in healthcare development and has invested substantially to strengthen its public health system. The state has expanded healthcare infrastructure through PHCs, CHCs, district hospitals, medical colleges, and Health and Wellness Centers. Karnataka has also achieved high institutional delivery rates and improved several health indicators through targeted health programs. However, challenges such as shortages of medical personnel, uneven distribution of healthcare facilities, and quality variations between urban and rural areas persist. Consequently, a study of the accessibility and

quality of healthcare services in India and Karnataka is important for assessing the effectiveness of existing healthcare policies and for suggesting measures to ensure equitable, efficient, and high-quality healthcare services for all citizens.

II. REVIEW OF LITERATURE

Khtar and Ramkumar (2023) conducted a review titled "Primary Health Center: Can it be Made Mobile for Efficient Healthcare Services for Hard-to-Reach Population?" The study focused on improving healthcare access for remote and underserved populations in India. The findings showed that geographic barriers, poor transportation, and inadequate healthcare infrastructure significantly limit healthcare utilization. The authors proposed mobile primary healthcare units as an innovative approach to improve access and health outcomes for marginalized communities.

Shastri et al. (2024), in their study "On the Path to Universal Health Coverage: Digital Healthcare Transformation with Karnataka's Online Referral Framework," analyzed the impact of Karnataka's digital referral system on healthcare service delivery. The study found that digital integration improved coordination among primary, secondary, and tertiary healthcare institutions, reduced referral delays, and enhanced patient access to specialized care. The authors emphasized the importance of digital health technologies in improving healthcare quality and efficiency in Karnataka.

Pradhan and De (2025) conducted a study titled "Women's Healthcare Access: Assessing the Household, Logistic and Facility-Level Barriers in India." The study examined factors affecting women's access to healthcare services in India. The findings showed that household income, distance to health facilities, transportation availability, and healthcare infrastructure significantly influence healthcare utilization. The study concluded that improving healthcare infrastructure and reducing socioeconomic barriers are essential to enhancing healthcare accessibility for women.

Raina and Dar (2026) conducted a study titled "Toward Client-Centered Healthcare Services: A Scale to Measure Attendant Perceptions of Hospital Quality in India." The study developed a framework for evaluating hospital service quality from the perspective of patients' attendants. The findings indicated that the overall quality of healthcare services in district hospitals was moderate, with significant gaps in responsiveness, infrastructure, communication, and patient care. The study recommended improving service quality dimensions to enhance patient satisfaction and healthcare outcomes.

III. RESEARCH GAP

The reviewed studies have focused on healthcare accessibility, digital health services, women's healthcare, and hospital service quality in India. While these studies provide valuable insights, they mainly examine healthcare issues at the national or state level and do not offer a comprehensive analysis of healthcare accessibility and quality at the district level. There is limited research on the performance of healthcare centres, availability of medical facilities, patient satisfaction, and quality of healthcare services in Chamarajanagar District of Karnataka. Therefore, the present study aims to fill this gap by assessing the accessibility and quality of healthcare services in Chamarajanagar District and identifying areas for improvement.

1. Objectives
2. To study the socio-economic status of the Healthcare beneficiaries in the study area.
3. To examine the impact of accessibility and quality of healthcare services in the study area.

IV. RESEARCH METHODOLOGY

The present study relies solely on primary data to assess the accessibility and quality of healthcare services in Chamarajanagar District, Karnataka. Primary data were collected from patients and healthcare service users using a structured questionnaire to gather information on healthcare accessibility, availability of medical facilities, service quality, patient satisfaction, and challenges encountered in accessing healthcare services. The study adopts a descriptive research design to analyze the current status and performance of healthcare centers in the study area.

A sample of 100 respondents has been selected from different healthcare centers in Chamarajanagar

District using simple random sampling. The collected data has been analyzed using descriptive statistics.

V. DATA ANALYSIS:

Table-1: Descriptive Statistics for the Sample Respondents for the Demographical and Healthcare Service Details

	N	Range	Minimum	Maximum	Mean		Std. Deviation	Variance
	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Statistic
Age	100	4.00	1.00	5.00	2.3400	0.11740	1.17396	1.378
Gender	100	1.00	1.00	2.00	1.1600	0.03685	0.36845	0.136
Education	100	5.00	1.00	6.00	3.1700	0.17236	1.72360	2.971
Marital Status	100	2.00	1.00	3.00	1.4400	0.06084	0.60836	0.370
Monthly Income	100	3.00	1.00	4.00	2.0900	0.06371	0.63715	0.406
Type of Healthcare Centres	100	4.00	1.00	5.00	2.5400	0.11842	1.18424	1.402
Healthcare Centres Distance	100	3.00	1.00	4.00	2.9300	0.08439	0.84393	0.712
Healthcare services easily accessible	100	2.00	1.00	3.00	2.0600	0.07222	0.72223	0.522
Timings (Reach the Healthcare Centres)	100	3.00	1.00	4.00	2.7700	0.10623	1.06225	1.128
Doctors Regulatory Available	100	3.00	1.00	4.00	2.2500	0.08454	0.84537	0.715
Medicine Available	100	2.00	1.00	3.00	2.1000	0.06590	0.65905	0.434
Emergency Service Available	100	1.00	1.00	2.00	1.7200	0.04513	0.45126	0.204
Diagnostic Facilities Available	100	2.00	1.00	3.00	1.8200	0.06417	0.64165	0.412
Rate the Cleanliness of the Healthcare Centre	100	3.00	1.00	4.00	2.2200	0.10306	1.03064	1.062
Satisfaction	100	3.00	1.00	4.00	2.2000	0.10541	1.05409	1.111
Improve Suggestion	100	3.00	1.00	4.00	2.3700	0.10698	1.06983	1.145

Table 1 presents descriptive statistics for the demographic characteristics and healthcare service details of the 100 sample respondents in Chamarajanagar District. The results indicate that the mean age score is 2.34 (SD = 1.17), suggesting that most respondents belong to the middle age groups. The mean education score is 3.17 (SD = 1.72), indicating a moderate level of educational attainment among respondents. Regarding healthcare services, the mean score for the type of healthcare center used is 2.54, while the mean distance to healthcare centers is 2.93, implying that many respondents travel a moderate distance to access healthcare facilities. The accessibility of healthcare services has a mean score of 2.06, indicating that healthcare services are generally accessible but with some limitations. The availability

of doctors (2.25), medicines (2.10), emergency services (1.72), and diagnostic facilities (1.82) reflects a moderate level of service provision in the healthcare centers. Furthermore, the mean cleanliness score is 2.22, while overall satisfaction with healthcare services is 2.20, suggesting an average level of satisfaction among respondents. The findings reveal that although healthcare centers provide essential services, improvements are needed in the availability of medical staff, diagnostic facilities, emergency services, and overall service quality to enhance patient satisfaction and healthcare accessibility in the study area.

Table-2: Healthcare Services Easily Accessible in the Different Healthcare Centres

			Healthcare services easily accessible			
			Yes	No	Partial	Total
Type of Healthcare Centres	Government hospital	Count	0	13	0	13
		% of Total	0.0%	13.0%	0.0%	13.0%
	Primary Health Centre (PHC)	Count	23	12	19	54
		% of Total	23.0%	12.0%	19.0%	54.0%
	Community Health Centre (CHC)	Count	0	0	9	9
		% of Total	0.0%	0.0%	9.0%	9.0%
	Private clinic/hospital	Count	0	13	1	14
		% of Total	0.0%	13.0%	1.0%	14.0%
	Urban health centre	Count	0	10	0	10
		% of Total	0.0%	10.0%	0.0%	10.0%
Total		Count	23	48	29	100
		% of Total	23.0%	48.0%	29.0%	100.0%

Source: Primary Data

Table 2 presents the relationship between the type of healthcare centres and the accessibility of healthcare services among the sample respondents. Of the 100 respondents, 48% reported that healthcare services were not easily accessible, 29% stated that services were partially accessible, and 23% indicated that services were easily accessible. Among respondents who accessed Primary Health Centres (PHCs), 23% reported easy accessibility, 12% reported difficulty accessing services, and 19% reported partial accessibility, making PHCs the most commonly used healthcare facility. Among respondents who visited Government Hospitals (13%), 13% reported that services were not easily accessible. Similarly, a majority of respondents using Private Clinics/Hospitals (13%) and Urban Health Centres (10%) also reported poor accessibility. In the case of Community Health Centres (CHCs), all respondents (9%) indicated partial accessibility. The findings suggest that healthcare accessibility remains a significant concern in the study area, with nearly half of respondents reporting difficulties accessing healthcare services, underscoring the need for improved healthcare infrastructure, transportation, and service delivery mechanisms.

Table-2a: Chi-Square Tests for Healthcare Services Easily Accessible

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	75.547[a]	8	0.000
Likelihood Ratio	87.607	8	0.000
Linear-by-Linear Association	0.831	1	0.362
N of Valid Cases	100		

a. 10 cells (66.7%) have expected count less than 5. The minimum expected count is 2.07.

Table 2a presents the Chi-Square test results examining the association between the type of healthcare center and the ease of accessing healthcare services. The Pearson Chi-Square is 75.547 with 8 degrees of freedom and a p-value of 0.000, which is statistically significant at the 1 percent level. This means there is a strong link between the type of healthcare center and ease of access to services. The Likelihood Ratio of 87.607 (p = 0.000) also supports this result. However, the Linear-by-Linear Association value of 0.831 (p = 0.362) is not significant, indicating no clear linear trend in access across healthcare center types. So, the null hypothesis of no connection is rejected, meaning that the ease of accessing healthcare varies by the type of center respondents use. This shows the need to improve access to healthcare across all healthcare centers to ensure everyone can get healthcare fairly in the study area.

Table-3: Healthcare Service Facilities Rate by Beneficiaries

			Healthcare Service Facilities Rate				
			Excellent	Good	Average	Poor	Total
Type of Healthcare Centres	Government hospital	Count	0	13	0	0	13
		% of Total	0.0%	13.0%	0.0%	0.0%	13.0%
	Primary Health Centre (PHC)	Count	1	7	36	10	54
		% of Total	1.0%	7.0%	36.0%	10.0%	54.0%
	Community Health Centre (CHC)	Count	9	0	0	0	9
		% of Total	9.0%	0.0%	0.0%	0.0%	9.0%
	Private clinic/hospital	Count	14	0	0	0	14
		% of Total	14.0%	0.0%	0.0%	0.0%	14.0%
	Urban health centre	Count	10	0	0	0	10
		% of Total	10.0%	0.0%	0.0%	0.0%	10.0%
Total		Count	34	20	36	10	100
		% of Total	34.0%	20.0%	36.0%	10.0%	100.0%

Table 3 presents ratings from sample health beneficiaries on the healthcare facilities available across different healthcare centers. Of the 100 respondents, 36% rated the facilities as average, 34% as excellent, 20% as good, and 10% as poor. Among respondents using Primary Health Centers (PHCs), the majority (36%) rated the facilities as average, while 10% rated them as poor, indicating room for improvement in service quality and infrastructure. Among respondents attending Government Hospitals (13%), 13% rated the facilities as good. In contrast, respondents using Community Health Centers (9%), Private Clinics/Hospitals (14%), and Urban Health Centers (10%) rated the facilities as excellent, reflecting higher satisfaction with the services provided by these institutions.

Table-3a: Chi-Square Tests for Healthcare Service Facilities

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	151.836[a]	12	0.000
Likelihood Ratio	157.845	12	0.000
Linear-by-Linear Association	42.189	1	0.000
N of Valid Cases	100		

a. 15 cells (75.0%) have expected count less than 5. The minimum expected count is .90.

Table 3a presents the results of a Chi-Square test examining the association between the type of healthcare center and the rating of healthcare service facilities. The Pearson Chi-Square value of 151.836 with 12 degrees of freedom and a p-value of 0.000 indicate a highly significant relationship between the type of healthcare center and beneficiaries' ratings of healthcare facilities. Similarly, the Likelihood Ratio value of 157.845 (p = 0.000) confirms a significant association. The Linear-by-Linear Association value of 42.189 (p = 0.000) is also statistically significant, suggesting a strong trend in ratings across different healthcare center categories. Therefore, the null hypothesis of no association is rejected, and it can be concluded that perceptions of healthcare service facilities vary significantly by the type of healthcare center used by respondents. The results indicate that certain healthcare centers are rated more favorably than others, emphasizing the need to improve facility quality and service standards, particularly in centers receiving lower ratings, to ensure better healthcare outcomes and patient satisfaction.

Table-4: The Sample Respondents' Overall Satisfaction of Healthcare Service

			Overall Satisfaction				
			Highly satisfied	Satisfied	Neutral	Dissatisfied	Total
Type of Healthcare Centres	Government hospital	Count	0	13	0	0	13
		% of Total	0.0%	13.0%	0.0%	0.0%	13.0%
	Primary Health Centre (PHC)	Count	0	18	22	14	54
		% of Total	0.0%	18.0%	22.0%	14.0%	54.0%
	Community Health Centre (CHC)	Count	8	0	0	1	9
		% of Total	8.0%	0.0%	0.0%	1.0%	9.0%
	Private clinic/hospital	Count	14	0	0	0	14
		% of Total	14.0%	0.0%	0.0%	0.0%	14.0%
	Urban health centre	Count	10	0	0	0	10
		% of Total	10.0%	0.0%	0.0%	0.0%	10.0%
Total		Count	32	31	22	15	100
		% of Total	32.0%	31.0%	22.0%	15.0%	100.0%

Table 4 shows the overall satisfaction levels among respondents with healthcare services at various centers. Of the 100 respondents, 32% were highly satisfied, 31% satisfied, 22% neutral, and 15% dissatisfied. Among those using Primary Health Centers (PHCs), most reported being either satisfied (18%) or neutral (22%), with 14% dissatisfied, reflecting mixed opinions on service quality. All respondents visiting Government Hospitals (13%) expressed satisfaction with the services. Conversely, a significant portion of respondents using Private Clinics/Hospitals (14%), Urban Health Centers (10%), and Community Health Centers (8%) reported being highly satisfied. Overall, nearly 63% of respondents were either highly satisfied or satisfied, indicating a generally positive view of healthcare delivery. Nonetheless, the presence of neutral and dissatisfied individuals underscores the need for further improvements in service quality, infrastructure, and patient care, especially in Primary Health Centers.

Table-4a: Chi-Square Tests of Healthcare Service Satisfaction of the Sample Respondents

	Value	df	Asymptotic Significance (2-sided)

Pearson Chi-Square	124.192[a]	12	0.000
Likelihood Ratio	145.936	12	0.000
Linear-by-Linear Association	36.269	1	0.000
N of Valid Cases	100		
a. 16 cells (80.0%) have expected count less than 5. The minimum expected count is 1.35.			

Table 4a presents the Chi-Square test results examining the relationship between the type of healthcare center and respondents' overall satisfaction. The Pearson Chi-Square value of 124.192 with 12 degrees of freedom and a p-value of 0.000 indicate a statistically significant association between the type of healthcare center and respondents' satisfaction levels. The Likelihood Ratio value of 145.936 ($p = 0.000$) further confirms this significant relationship. Additionally, the Linear-by-Linear Association value of 36.269 ($p = 0.000$) is statistically significant, suggesting a strong trend in satisfaction levels across different types of healthcare centers. Therefore, the null hypothesis of no association is rejected, and it can be concluded that respondents' overall satisfaction varies significantly with the healthcare center they use. The findings suggest that certain healthcare centers provide better service experiences and higher patient satisfaction than others, highlighting the need to improve healthcare quality, infrastructure, and patient care services, particularly in centers where satisfaction is comparatively lower.

VI. MAJOR FINDINGS

1. The majority of respondents reported moderate accessibility to healthcare services, with a mean accessibility score of 2.06 and overall satisfaction score of 2.20, indicating that while essential healthcare services are available, there are notable limitations in ease of access and overall patient satisfaction.
2. There are significant differences in service quality and satisfaction levels depending on the type of healthcare center. Private clinics/hospitals, urban health centers, and community health centers received the highest ratings for facility quality and satisfaction, while primary health centers (PHCs) and government hospitals received more average or mixed ratings.
3. Nearly half of the respondents (48%) reported that healthcare services were not easily accessible, with government hospitals and PHCs cited most frequently for access difficulties. This underscores the need for improving infrastructure and service delivery, especially in public healthcare facilities.
4. Chi-square analyses revealed statistically significant associations between the type of healthcare center and key outcome variables such as accessibility, facility ratings, and overall satisfaction ($p < 0.001$ in all cases), indicating that the kind of healthcare center accessed plays a pivotal role in shaping patient experiences.
5. Primary Health Centers (PHCs) were the most utilized healthcare facility (54% of respondents), but a majority rated their facilities as average and only a minority expressed high satisfaction. This highlights the importance of focusing quality improvement efforts on PHCs to enhance community health outcomes.
6. All respondents who accessed private clinics/hospitals and urban health centers reported being highly satisfied with their healthcare experiences, reflecting superior service quality, infrastructure, and patient care in these facilities compared to public alternatives.

VII. CONCLUSION

In conclusion, the analysis of healthcare service delivery in Chamarajanagar District reveals significant disparities in accessibility, quality, and patient satisfaction across healthcare centers. Private clinics, urban health centers, and community health centers report higher levels of service satisfaction and facility ratings, whereas a substantial proportion of respondents using government hospitals and primary health centers report moderate to low satisfaction and accessibility. The findings highlight the urgent need for targeted improvements in public healthcare infrastructure, service quality, and accessibility particularly within primary health centers to ensure more equitable, efficient, and satisfactory healthcare experiences for all residents in the district.

Strengthening these aspects will be crucial for advancing overall public health outcomes and fostering greater community trust in the healthcare system.

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