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Identifying Patient Perceptions of Inequality in Public Health Care Services: Evidence From a Single Indian Administrative District

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Purpose	Assessment of patient experiences is an essential step to revamp patient-centered care and identify systemic effectiveness as part of universal health coverage. This paper analyzes the variation of health care at different levels of the public health care system in India by measuring patients' experience with the care they have received in the Alipurduar district of India.
Methods	From May 2021 to April 2022, stratified sampling technique was applied to collect primary data from 450 patients having different health problems from different levels of the public health care system. In addition, Consumer Assessment of Healthcare Providers and Systems (CAHPS) survey results were used to evaluate patient experience, with the reliability of questions measured by Cronbach's alpha. Collected data were categorized with the help of exploratory factor analysis; after which, analysis of variance and post-hoc tests were applied to understand specific variations in patient experiences.
Results	This study identified that the services delivered in the health centers were not suitable (6.160 out of 10) to fulfill the needs of the patients. Among the three domains of health care services — namely, proficiency, tangibility, and information — the experience of patients significantly varied ($P < 0.001$) when comparing primary, secondary, and tertiary levels of the public health care system.
Conclusions	Patients receiving services from the centers under the tertiary level have expressed lesser satisfaction than those patients who have received care at primary or secondary levels because of excessive patient load, inadequate manpower, and other infrastructure deficits at the tertiary level. (<i>J Patient Cent Res Rev.</i> 2023;10:121-127.)
Keywords	public health care system; patient experience; pressure on patients, inequality; India

India's current health care system is based on the report of the Bhore Committee (1946),¹ which divided the national system into three levels — tertiary, secondary, and primary — based on the services delivered.² The tertiary level of the health care system includes hospitals and medical colleges that serve as referral institutes for higher-level care and provide advanced medical investigation and treatment. The secondary level of the Indian health care system consists of community health centers (CHCs), which are supposed to have at least 30 beds, an operating theater, a laboratory, a team of 4 medical specialists, and a support staff of 21.³ The primary level of Indian health care includes primary

health centers (PHCs), which act as an essential health care delivery point where other higher-level public and private facilities have not been developed.

In India, over the last few decades, while economic development has been gaining momentum,⁴ India's public health care system is at crossroads. Private health care services in the country have expanded rapidly due to the failure of the public health care system to provide accessible and equitable care to patients. The lower level of gross domestic product and subsequent little investment in the public health sector, along with lower per capita income in India in comparison to more developed countries, are the foremost causes of non-patient-centered care and compromised public health care quality.⁵ Consequently, there is a difference in receiving health care quality and rendered services between the patients at primary, secondary, and tertiary levels in India. Variation in health care quality and services has been reported over the years in many countries, particularly in underdeveloped and developing countries.⁶ Inequality

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in the strength of manpower, infrastructure status, and patient loads is a common problem in any health care system, and India doesn't have any exception to that.

There are many methods that have been used in India to assess the quality of health care.^{7,8} However, measuring all the aspects of health care is very complex due to its intangible nature. Patients who have experienced public health care services can offer unique insights into the quality of care.⁹ In early 2000, the World Health Organization and U.S. Institute of Medicine stressed the importance of patients' perspectives on quality to assess health care.¹⁰ In addition, patient-centered health care is one of the focal missions of universal health coverage across most countries.¹¹ Many organizations worldwide consider patient experiences as a major source of information to evaluate and improve health care quality.

Geographically and economically, the Alipurduar district, is one of the disadvantageous areas in India,¹² where the quality of health care services provided by the hospitals is at a dismal level.¹³ Alipurduar was additionally impacted by the COVID-19 pandemic, further crippling the situation.¹⁴ In this cross-sectional study, we strived to bring attention to the experiences of patients regarding the care they received at different health care centers in India's Alipurduar district to assess inequality and variation of public health care services, per patient perception, delivered among the three tiers of the Indian health care system (ie, tertiary, secondary, and primary).

METHODS

Study Area: Alipurduar

The coordinates of the Alipurduar district are 26.6476° N latitude and 89.4135° E longitude. There are 3 hospitals, 6 CHCs, and 13 PHCs in the study district. Since the area is located amid tea gardens, with both hilly and plain topography, health care centers are not optimally distributed; some parts are fully deprived of basic health care facilities.

Study Sample and Setting

The district's total population (1,501,983 per 2011 census) was taken into consideration, as public health care facilities provide services to the whole population of the district. Cochran sample size formula is most suitable for a large population¹⁵ and was applied with 95% confidence for detection of significant differences. The calculated sample size was 378 and, for this study, a total of 450 samples were considered to minimize the error assuming a 10% dropout rate. The power of the sample size is more than 80%, considered ideal for any study.¹⁶ Based on the previous studies on CAHPS survey questions^{17,18} medium effect size (0.50) was considered in the determination

of sample size and indicated that 450 was an adequate number to measure the reliability of questions. The Kaiser-Meyer-Olkin value in exploratory factor analysis is 0.864, which is more than the 0.60 sampling adequacy indicated for this test. In addition, based on a level of significance set at alpha of 0.05¹⁹ and standard deviation of the dataset (<0.90), the sample size was sufficient for comparisons using analysis of variance (ANOVA).

All the hospitals, CHCs, and PHCs in Alipurduar were survey-eligible. As the public health care system in India is of three levels (tertiary, secondary, and primary),² by applying stratified sampling technique, 150 samples was taken from each level (450 / 3 = 150). The number of respondents to be interviewed from each health care center was determined by dividing 150 samples with the number of centers at that particular level; hence, 12 patients from each PHC, 25 from each CHC, and 50 from each hospital were selected for the survey.

Data Collection, Ethical Considerations

From May 2021 to April 2022, data were collected with the help of a questionnaire through in-depth interviews with patients. A comparative analysis was done among the three levels of public health care centers to show the variation in health care services. In addition to obtaining standard informed consent, permission for conducting interviews with inpatients (ie, patients admitted to a health care center) and outpatients (ie, patients not admitted but who visited a doctor for medical treatment within health care center premises) was granted by Alipurduar's Chief Medical Officer of Health. In accordance with Indian policy regarding participant protection, this chief medical officer determined that no additional review board or ethics committee permission was required to conduct this type of study, which did not include biomedical or clinical research.

The 2018 Consumer Assessment of Healthcare Providers and Systems (CAHPS) survey²⁰ was followed, with necessary modifications after obtaining due permission for the purpose of the study and validated by an expert panel. A total number of 19 questions relevant for both inpatients and outpatients was included in the study, and patients' experiences were reflected through a rating scale ranging from 0 to 10. To measure the reliability of the questions, Cronbach's alpha, for which >0.70 was deemed acceptable, was calculated. Patient responses were analyzed retrospectively.

Since the Alipurduar district has 13 PHCs, 6 CHCs, and 3 hospitals, the patient experience from 22 health care facilities was received. The required primary data were collected from both inpatients and outpatients who were physically able and willing to share their experiences.

Data Analysis

First, exploratory factor analysis was conducted to reduce the measurable and observable variables to fewer latent variables that share a common variance and are unobservable.²¹ One-way ANOVA test was then applied to measure the inequality in the experience of patients in terms of available facilities under the three types of health care centers. Lastly, post-hoc tests were applied to identify the specific differences in the patients' experiences.

RESULTS

Sample Characteristics

In the study, most respondents were from the age group of 35 to 50 years (44.8%) and 22.6% of patients were more than 50 years old. In all, 52.8% were female and 47.2% male. The monthly income of 34.0% of respondents was below INR 7000, while the monthly income of 36.8% of patients was more than INR 10000. Among respondents; 82% lived in rural areas.

Principal component analysis was applied to exploratory factor analysis in SPSS Statistics (Version 20.0, IBM

Corp.) to examine the construct validity of the items. The result of exploratory factor analysis revealed that three extracted factors — proficiency, tangibility, and information — could explain 77.1% of the variance (Table 1). These factors were interpretable, and the categorization of items defineable.

Proficiency. The behavior and responsibilities of health care providers, the time they spend with patients, and the way of treatment are defined as proficiency.²² Proficiency was the most influential factor in health care services, indicating that patients appreciate doctors who provided sufficient time to patient questions and who gave clear explanations of treatments. The first component explained 38.8% of the total variance for which factor loadings ranged from 0.922 to 0.739 (Table 1).

Tangibility. Cleanliness of toilets and wards, sunlight and space of health center, condition of physical facilities, and the presence of drugs and human resources involved in rendering the services are considered to be components of tangibility.²³ This was the second most important

Table 1. Rotated Component Matrix^a

Variables	Component		
	1	2	3
Proficiency			
Provider understands patients' specific need	0.922		
Give individual attention to patients	0.909		
Maintain privacy during checkup	0.894		
Concern with you when giving services	0.893		
Show friendliness during services	0.855		
Punctuality of providers	0.803		
Giving enough time for checkup	0.789		
Cooperate with patients' family	0.788		
Doing paperwork properly	0.765		
Giving services in a systematic way	0.739		
Tangibility			
Cleanness of toilets and wards		0.944	
Space and sunlight		0.933	
Level of availability of required drugs on time		0.929	
Waiting facility		0.794	
Availability of staffs and health care providers		0.764	
Information			
Explain whom to contact in case disease is worsening			0.916
Provider's explaining thing is understandable			0.896
Giving dietary guidance			0.810
Explain the procedure of treatment			0.806

Extraction method: principal component analysis. Rotation method: Varimax with Kaiser normalization.

^aRotations converged in 5 iterations.

component, having factor loadings of 0.944 and 0.764 that explained 21.2% of the variance (Table 1).

Information. The third component, defined as the level of information received regarding treatment, dietary guidance, the procedures patients experienced at health care centers, and their understanding of explanations made by the providers was able to explain 17.1% of the total variance. These four items of information had a strong correlation with the factor, ranging from 0.916 to 0.806 (Table 1).

The result of Cronbach's alpha of 19 parameters was 0.926, showing the higher level of internal consistency in the study, and the alpha value of each of the three indicators provided an acceptable result, ie, >0.70 (Table 2). The internal consistency describes the extent to which all the items in a test measure the same concept or construct, and therefore it is connected to the interrelatedness of the items within the test.²⁴ The mean value of proficiency was highest (6.544 ± 0.643), whereas tangibility of services had the lowest value (5.691 ± 0.675) because most of the respondents experienced unclean conditions in the toilet and wardroom. The mean value of information (5.787 ± 0.809) indicated that the quality of these services hardly achieves a moderate level. The mean score of the perception of respondents about the overall condition of health care services was 6.160 out of 10 points, which shows that patients in these three levels of health care centers are not fully satisfied with the overall condition of health care services (Table 2).

A significant variation was found in the experience of the patients among the three types of health care centers ($P \leq 0.001$ for each comparison). The mean variation in the perception of patients about proficiency was highest at 0.456 effect size, a large effect according to Cohen's classification. In the case of tangibility and information, effect sizes were 0.040 and 0.041, respectively, indicating the medium effect of the services provided by the health centers to their patients. In addition, patients in the hospitals provide the least score to measure the health care services (proficiency: -0.807; tangibility: -0.205; information: -0.313) (Table 3).

Table 3 serves to guide understanding of the differences in the experience of patients among the different types of public health care centers. The highest mean difference in the experience about proficiency was found between the hospitals and PHCs (1.640) at 5% level of significance. A lower difference was found at the level of information (0.129; $P=0.496$) between CHCs and PHCs, showing treatment-related information that patients have received at these two types of health care centers was almost

similar. In addition, lower differences were noticed in the tangibility of services between CHCs and hospitals (0.200) and CHCs and PHCs (0.287), whereas among hospitals and PHCs, the variation of all the services was higher (Table 4).

DISCUSSION

Variation in Health Care Services

High-quality treatment is a predisposing factor for improved patient experience satisfaction level. This study shows that the variation in the experience of patients with public health care services is mainly found between tertiary (hospital) and primary (PHC) levels because there are huge differences in the type of services and the availability of facilities provided by the tertiary and primary level centers. Most of the patients are less satisfied with the quality of care that they receive from hospitals as compared to other health care centers.

Among the three levels of the public health care system, the higher variation is mainly found in the responsibility and behavior of providers, indicating the cognitive, emotive, and behavioral natures²⁵ that are widely different from the lower level to the higher level. In hospitals of the study district, Alipurduar, most of the patients have the same type of complaints that the providers remain too busy and don't have time to speak with them. Due to the shortage of health personnel and huge patient pressure, the nurses and doctors are compelled to do the jobs of others and, as consequence, their interaction with patients and quality of care is affected.²⁶ As compared to the tertiary level, the secondary and primary level centers provide lesser services and serve a lesser number of patients. Therefore, it is easier for health care providers to maintain their behavioral modesty in the delivery of services. Therefore, despite providing a higher level of services as compared to tertiary health centers, higher numbers of patients remaining unsatisfied with care was observed in the other two types of centers.

It is also noticed that the authority of Alipurduar District Hospital and Birpara State General Hospital provides mattresses due to the scarcity of beds; conversely, in CHCs and PHCs, the beds remain vacant. This situation stipulates an inequality in the status of health care services among the different types of public health care centers. As per the report of the District Statistical Cell, Office of the Chief Medical Officer of Health, Alipurduar, there is a huge disparity in the load of patients, where higher-level public facilities witness excessive patient pressure for most of the time beyond their serving capacity across the district, even in the state to which the district belongs because access to public health centers does not necessarily confirm the availability of essential health care services during their treatment.²⁷

Table 2. Descriptive Statistics of Components of Health Care Quality and Measurements Results

Services	Mean	Standard deviation	Cronbach's alpha
Proficiency – 10 components	6.544	0.643	0.933
Tangibility – 5 components	5.691	0.675	0.934
Information – 4 components	5.787	0.809	0.911
Overall patient experience – 19 total components	6.160	0.769	0.926

Table 3. Results of 1-Way ANOVA to Identify Variation in Patients' Experiences Among Different Types of Health Care Centers

Services by type of health care center	Mean	Standard deviation	F	P	Effect size, η^2
Proficiency			187.302	<0.001	0.456
Hospital	-0.807	1.048			
CHC	-0.186	0.588			
PHC	0.836	0.460			
Tangibility			9.413	<0.001	0.040
Hospital	-0.205	0.933			
CHC	-0.005	1.018			
PHC	0.282	0.977			
Information			9.656	<0.001	0.041
Hospital	-0.313	1.065			
CHC	0.043	0.937			
PHC	0.172	0.965			

ANOVA, analysis of variance; CHC, community health center; PHC, primary health center.

Table 4. Results of Post-Hoc Test to Identify Variation in Patients' Experiences Among Health Care Centers

Dependent variable	(I) type of hospital	(J) type of hospital	(I-J) mean difference	Standard error	P
Proficiency	Hospital	CHC	-0.621*	0.086	<0.001
		PHC	-1.640*	0.086	<0.001
	CHC	Hospital	0.621*	0.086	<0.001
		PHC	-1.023*	0.086	<0.001
	PHC	Hospital	1.644*	0.086	<0.001
		CHC	1.023*	0.086	<0.001
Tangibility	Hospital	CHC	-0.200	0.113	0.181
		PHC	-0.487*	0.113	<0.001
	CHC	Hospital	0.200	0.113	0.181
		PHC	-0.287*	0.113	0.030
	PHC	Hospital	0.487*	0.113	<0.001
		CHC	0.287*	0.113	0.030
Information	Hospital	CHC	-0.356*	0.114	0.006
		PHC	-0.485*	0.114	<0.001
	CHC	Hospital	0.356*	0.114	0.006
		PHC	-0.129	0.114	0.496
	PHC	Hospital	0.485*	0.114	<0.001
		CHC	0.129	0.114	0.496

*The mean difference is significant at the 0.05 level.

CHC, community health center; PHC, primary health center.

Inequality Within Universal Health Coverage

Although universal health coverage is a priority in India, the quality of health care services varies dramatically between different states and between urban and rural areas of the country.²⁸ This is because of its geographical and income differentials, resulting in the unique context of each region in terms of health care quality.²⁹ Increasing population, socioeconomic constraints, and inadequate investment in the public health sector have been acting as key determinants for India's unequal health care story, and our study district represents this truth. In addition, the country experiences the problem of the critical shortage of health care providers,⁴ and this situation is no different in the study district.

Despite having ample evidence regarding quality of health services as the focus of the Indian government instead of quantity,³⁰ India has failed to achieve this goal of universal health coverage already achieved by most developed countries. In developed nations, the governments have focused on increasing access to additional private health care coverage to supplement government-run universal coverage;²⁸ however, inequalities in health are recognized to be a major problem.³¹ To identify these challenges, most countries have conducted studies on patients' perspectives of health care, an important part of universal health coverage. The access to health care services is costly for poor people in developed nations,³² though its quality is better than in India. Studies of developed countries show better patient satisfaction while receiving care from hospitals³³ because of adequate health sector investment and the resultant improved infrastructure that most people of India do not get in many of the public hospitals.

The inequality in public health care services is deemed as a major challenge,³⁴ especially in countries like India where bulk of the population struggles to get basic health care services. There is a need to adopt technology like promoting virtual care protocols and telehealth services to control the unbalanced patient load.³⁵ In addition, the availability of services, eg, manpower, bedding facility, medical equipment, and drugs, among the different health care centers should be consistent with patient loads, which also influenced the maintenance health care standards across the study area.

Limitations

This study is fully based on the primary survey in which the perceptions of patients were obtained without considering patients' socioeconomic and demographic characteristics. This study was conducted over one small area in a large nation, so findings may not be generalised broadly. In addition, the results may not apply to different national health systems.

Implications

This study helps to understand that different levels of health care systems have both overlapping and unique issues, challenges, and problems, some of which cannot be measured quantitatively. Therefore, it is highly essential to conduct qualitative research by collecting feedback from patients to identify ailments at different levels. Additionally, the goals of any developmental health policy or health care infrastructure projects should be based on patient needs and patient loads in a given area.

CONCLUSIONS

When considering patients' health care experience as an important indicator of health care service quality based on their perceptions, this study reveals that the providers' behavior and responsibility are the two most important services, influencing most of a patient's satisfaction. Patients from primary and secondary centers are more satisfied than those patients who receive care from the tertiary level. Greater access to health care facilities at the primary level, nearest to the patients and at their first point of entry into the system, would minimize the need to travel long distances to receive care for more minor problems and likely improve patient satisfaction.

Patient-Friendly Recap

- While India's national health care system features universal health coverage, not all patient experiences are equivalent.
- Authors analyzed responses to a validated questionnaire that asks patients about their satisfaction with care experiences to measure the perceived quality of services provided at various levels of the public health care system within one rural Indian district (Alipurduar).
- They found that, overall, patients often deemed services unsuitable to fulfill their needs and also that tertiary centers received lower satisfaction marks than those at the primary or secondary levels, largely due to excessive patient load and/or lack of health care providers.

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Author Contributions

Study design: Biswas. Data acquisition or analysis: Biswas. Manuscript drafting: Roy. Critical revision: Roy.

Conflicts of Interest

None.

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