

## EFFECTIVENESS OF PRIMARY HEALTHCARE CENTRES IN DELIVERING HEALTHCARE SERVICES: A STUDY IN SONITPUR DISTRICT OF ASSAM.

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### ABSTRACT

**Background:** Good health is the right of every individual and is of utmost importance for the development of the society. In the context of healthcare service, patients' perception is an important indicator of healthcare quality and effectiveness of healthcare delivery. This paper focuses on finding out the effectiveness of primary healthcare centres in delivering healthcare services in Sonitpur District of Assam by examining health infrastructure and evaluating patients' perceptions on the quality of service received.

**Method:** Methodology adopted for the study is descriptive. For the present study 3 health blocks of the district having a total of 27 PHCs were selected purposively and surveyed on health infrastructure and facilities availability using structured questionnaire. To cross check the quality of service 135 patients from the respective PHCs were interviewed to find patients perception on the quality of healthcare using a questionnaire consisting of 32-item scale with four sub-scales. The study was conducted between January to April 2019 using face to face interview technique and the data was analyzed using SPSS version 20.

**Results:** Findings revealed majority of the PHCs lacked proper support services such as washroom facility, public transport facility and functional ambulance service. Besides these, the equipment and laboratory facilities were reported to lack desired standards which act as a barrier in providing accurate results. Regarding manpower availability it was found 7.4% of the PHCs to operate without a doctor, 25% PHCs to lack nurse Midwifery as per norms and 14.8% of them to be without an ABPM. Patients perceived quality on the health facility were rated lowest on ambulance facility, maternal healthcare services, condition of washroom and laboratory facilities.

**Conclusions:** Recognizing which service has not been provided acceptably over time helps the hospital staff to put in more efforts and take measures to overcome the problems associated with the service. Further, the findings of the study urge the policy makers and government to consider patients perception as well to improve the quality of service and subsequently increase their utilization.

**KEYWORDS:** Health services, Primary Healthcare Centre, Service quality perception & Sonitpur District

### 1. INTRODUCTION

Health is the right of every individual. Health is an important component for the development of the economy as health and socio-economic development follow each other. Therefore, a nation should have provision for sound healthcare facility both in rural and urban areas. Good health is vital to keep manpower productive and efficient but the lack of proper infrastructure, acute shortage of qualified medical functionaries and non-access to basic medical facilities and medicines thwarts its reach to 60% of population in India particularly people of rural areas. <sup>[1]</sup>

India being a nation of villages where 70% of the population lives in rural areas requires an intensive approach towards rural health. [2] Public health infrastructure in rural India has been developed as a three tier structure to provide healthcare services to its people. The health infrastructure consists of Sub-Centre (SCs), Primary Health Centre (PHCs) and Community Health Centre (CHCs) based on pre-determined population norms. Although substantial improvements have been made in health sector in India in the last 60 years since independence, but the health outcomes remain inadequate when India is compared with some other countries with similar economic stages of development at the time of independence. [3]

Improvement in the quality of services provided by primary healthcare apart from increasing accessibility and affordability has become a matter of grave concern for the developing countries including India in the recent years. According to the Institute of Medicine (2001), [4] Quality in healthcare is “the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge”. Institute of Medicines focused on six dimensions or attributes for improving the healthcare – safety, timeliness, effectiveness, efficiency, patient centered and the sixth one is equitable. Considering the above parameters, the present study has tried to find out the effectiveness aspect of primary healthcare centre in delivering healthcare services in Sonitpur district of Assam.

Effectiveness is the capability of producing a desired result or the ability to produce the desired output. When something is deemed effective, it means it has an intended or expected outcome, or produces a deep vivid impression [https://en.m.wikipedia.org/wiki/effective]. On the other hand, an important tier of public health infrastructure i.e. a PHC is formed for a population of 30000 in plain and 20000 in hilly/difficult area consisting of a medical officer and 14 paramedical and other staff. This health facility should have 6-10 beds to provide healthcare facilities to indoor patients. [5]

## **2. NEED FOR THE STUDY**

Good health is the right of every individual and is of utmost importance for the development of the society. According to the opinion of researcher, patient or user perception plays an important role in defining the quality of care. Patients evaluate a service as satisfying when it is useful, effective and beneficial to them. Therefore, improvement in the quality of healthcare services is necessary. Keeping this in mind, the current study aims to assess the effectiveness of PHC in delivering healthcare services in rural areas. The study will help to identify the strength and weakness of the services provided and can assist in quality improvement by making services more responsive and client-oriented. Moreover, such assessment will provide information to the policy makers about the areas that need attention and steps for improvement can be taken for the same.

## **3. OBJECTIVES OF THE STUDY**

In order to find out the effectiveness of primary healthcare centre two objectives have been set. They are:

- To study the healthcare infrastructure in the District.
- To examine the quality of services provided by the health centers.

## **4. REVIEW OF LITERATURE**

From the review of various literatures, it is noted that service quality is a complex process and difficult to measure as quality is intangible and subjective. After reviewing the available literature on healthcare service quality it came to notice that healthcare service quality consist of technical and functional quality components.

The technical quality mostly refers to medical diagnosis and procedures and technical analysis, while the functional quality refers to the manner in which the healthcare service is delivered to the patients. In other words, technical quality is about 'what' service patients get from the healthcare staff or it refers to the efficiency of the staff in performing their duty which includes clinical and medical skills, administration of drugs, nursing skills and competency of other staff in performing their duties. On the other hand, functional quality refers to the process or the way in which the service is delivered to the patients/ customers. Patients often rely on the functional aspects such as infrastructure, interaction between service receiver and service provider and the administration of the health institute. [6-7]

Studies have brought to light, patient satisfaction as an important indicator of healthcare quality, medical care quality and effectiveness of healthcare delivery. Although the quality of service and effectiveness depends largely on the standards of medical staff's performance but recently patients preferences have been found to be a significant factor. Paying attention to patients' preferences and opinions is one of the reasons that have made healthcare organization successful since 1990s. [8] Users play an important role in defining and assessing the quality of care and effectiveness of healthcare delivery in health system as they choose where to go for care based on their opinions, evaluation and previous experiences with the health system. According to the opinion of researchers, real improvement in the quality of care cannot be ensured if user perception is not involved as patients' perception impacts their health seeking behavior including utilization of services. [9]

From the above discussions it can be summarized that healthcare service quality from patients/customers viewpoint can be determined by using the antecedents- infrastructure and health facilities, interpersonal aspect of healthcare and staff behavior, administration procedure and healthcare delivery. Therefore in the present study the above mentioned measures have been used to find out effectiveness of healthcare services in the district from patients viewpoint.

**Infrastructure and Health Facilities:** The concept of infrastructure is an indirect measure of the quality of care provided to patients. Infrastructure in health refers to the tangible feature which includes physical infrastructure of the hospital, equipment, facilities available, availability of human resource and environment condition.

**Interpersonal Aspect of Healthcare and Staff Behavior:** In healthcare service, interpersonal communication is the ability of the provider to elicit and understand patients concerns. It is an important component as it affects patients' perception about the effectiveness or the quality of care. Behavior of health staff also plays major role in determining the quality of service provided by the health institutes.

**Health Care Delivery:** It is the primary service or core service or technical quality of hospital service. It includes medical and nursing care. Medical care refers to 'what' service patients get from the doctor. On the other hand, a health institute comprises of various workforces out of which nurses make up the majority and they spend more time with the patients providing primary healthcare services as compared to other service providers. Hence, nursing care is one of the major service deliveries in a hospital and is used as an important antecedent to measure the patient's viewpoint about the quality of healthcare.

**Administration:** Administration procedure in hospital includes the process of admission, clinical appointments, stay and discharge of the patients, response to complaints and service charge. It is important in ensuring patients viewpoint on the quality of health care services.

## 5. MATERIALS AND METHODS

### Study Location

Sonitpur is an administrative district in the state of Assam spread over the Northern banks of river Brahmaputra with a population of 21,10,755 as per 2017-18 Census. The demography of Sonitpur District is not entirely homogenous as several religious and ethnic communities and groups live in the District. As per health survey report, there are eight health blocks in Sonitpur District of Assam. In the eight health blocks there are a total of 53 PHCs. For the purpose of the study 3 health blocks has been purposively selected. In the 3 health blocks there are a total of 27 PHCs including Block PHCs.

### Instrument for Survey

The study examines the quality of primary healthcare services in Sonitpur district in the state of Assam in India by using a 32-item scale. This scale is based on a validated 20 item scale developed by Duong et.al<sup>[10]</sup> for use in Vietnam. The dimensions included in this study to measure client perceived quality were: health facility, healthcare delivery, interpersonal aspect of care and access to services. Later Karkee et.al<sup>[11]</sup> adapted this scale in the context of Nepal and removed the items related to economic accessibility. The research tool employed in the present study was subsequently adjusted to match local understanding and to reflect the Indian context.

In this study, like Karkee et.al.,<sup>[11]</sup> the accessibility part is removed and a new subscale on administration procedure was added. The 12 variables added to this scale had emerged after in- depth interviews. The final scale consist of 32 items in four dimensions: 11 items on infrastructure and health facility, 10 items on interpersonal aspect of healthcare and staff behavior, 6 items on healthcare delivery and 5 items on administrative procedure.

### Data Collection and Analysis

A study was conducted between 1<sup>st</sup> January 2019 and 30<sup>th</sup> April 2019 to find out the effectiveness of primary healthcare centre in the district. All 27 PHCs in the 3 health blocks were visited during the period for the survey. To cross check the quality of service PHC patients/attendants who were present at the time of PHC visit were interviewed. Permission was obtained from the district health office for the study.

Face to face interview technique was used for collecting data using structured questionnaire. Two set of structured questionnaire has been prepared for the study. First set for the PHC health workers and the second set for PHC patients or beneficiaries. For the study of the first objective all the PHC workers in the 3 health blocks were interviewed using first set of questionnaire. For the 2<sup>nd</sup> objective beneficiaries opinions were considered to cross check the quality of service using second set of questionnaire. From each PHC 5 beneficiaries were interviewed making a total of  $27*5=135$  beneficiaries. Patients' viewpoint or perception about the quality of healthcare services was measured using structured questionnaire containing a total of 32-items each measured on a five point Likert scale that ranged from a score of (1) Dissatisfied, (2) Not satisfied, (3) Neutral, (4) Satisfied, (5) Highly satisfied. Four sub scales namely infrastructure and health facilities, interpersonal aspect of healthcare and staff behavior, healthcare delivery and administration procedure were considered for the study.

In order to simplify the data and analysis, the collected data were coded in standard form and entered in the MS excel. Then the data analysis was done using SPSS 20. Frequency, percentage, mean and standard deviation were presented in the result section as per the nature of the data.

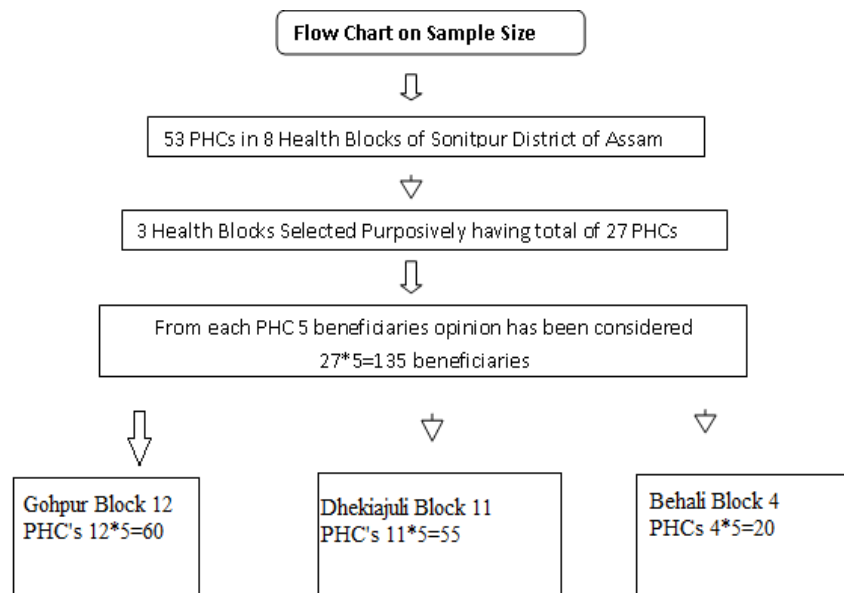


Figure 1: Flow Chart on Sample Size

## 6. RESULTS

From the responses of health workers of the 27 studied PHCs it was found that approximately 67% of the PHCs reported to have adhered to the norms of 30,000 or less population. On the other hand, there were 33% PHCs that had population above norms. Out of these, 14.8% of them had population between 30,000 and 50,000 and 11% of them had population in between 50,000-70,000. The 7.4% PHCs that had population above 1 lakh were all block PHCs. Having population above norms makes it difficult for health workers to provide proper services to the community.

### 6.1 Infrastructure

#### 6.1.1. Physical Infrastructure

Regarding the physical infrastructure it was found that all the PHCs operated in government buildings but only 33% of the buildings were constructed partly or fully with NRHM funds. Again, a PHC shall have atleast 8 rooms to deliver their services properly and approximately 66% of the PHCs reported to have adhered to the guidelines. According to the study 41% of the PHCs in the area did not have sufficient space to perform its activities though some of them had 8 rooms which is as per standard room set for a PHC. Apart from these, all the PHCs had proper ventilation facility to allow sufficient sunlight. Moreover, boundary wall/fencing and gate is needed in a hospital campus for security purpose but 37% of the PHCs in the study area lacked such facilities. Absence of proper health infrastructure acts as an obstacle in providing effective service to the community.

#### 6.1.2. Equipment and Medicines

To ensure proper primary care providers and staff should have access to required equipment and supplies. In the studied PHCs almost all the basic equipment necessary to provide primary care were available but none of them had delivery kit from the last seven to eight months. Moreover, benedicts lotion, microscope and oxygen cylinder were not available in

44%, 4% and 19% of the PHCs. According to the laboratory technicians the equipment specially the laboratory equipment in private institutes are much more advanced and provide accurate measure than the equipment in government health institutes.

From the study it has been found that PHCs sometimes do not have all the required medicines. During the time of scarcity they have to bring the medicines from the nearest government hospital or CHCs if available there. Insufficient medicines and lack of standard equipment are important barriers in providing quality services to the community.

### **6.1.3. Support Services**

Support Services are required for successful execution of the healthcare services. From the study it has been found that apart from only 4% PHCs in the studied area all other have electricity supply and regular water supply. Water supply sources were tube-well, well, hand pump, etc. According to the report, many of the PHCs water contained iron and to make it drinkable water purifier was used or boring was done with the money received yearly from the government as untied fund. Even after basic purification 8% of the PHCs did not have drinkable water and the workers had to carry water from their home to workplace. Apart from these, 11% of the PHCs did not have usable washroom.

Secondly, 40% of the PHCs had poor public transport facility to reach the PHC area and only 30% of them had working ambulance in their premises to carry the referred patients. Besides these, 37% of the PHCs did not have generator/inverter facility to provide backup service at the time of current cut out. Few years back government provided landline telephone service to health institutes. Today every health worker has their own personnel mobile and the landline service is no more. Plus this health facility should have 6-10 beds to provide healthcare services to indoor patients but 50% of the studied PHCs have only 2-3 observatory beds for patients.

Thirdly, though Mobile Medical Unit operated in the studied centre but as per enquiry they use to visit the centre or its subsidiaries i.e. SCs once every 2-3 months. One of the reasons for these could be inadequate MMUs. Mobile vans equipped with basic medical facilities can act as a supplement of primary health centre and travel to those areas where PHCs do not exist or have failed to meet the requirements of people. Therefore, there is a need to increase the frequency of visits of MMUs so as to provide efficient and effective healthcare services.

### **6.1.4. Environment and Hygiene Condition**

Environment hygiene is important to prevent transmission of infectious diseases within healthcare settings. In healthcare, it encompasses all the practices that prevents or minimizes the spread of disease. In the studied PHCs hygiene practices was not up to the mark and efforts can be made to make it more reliable.

### **6.1.5. Human Resource Availability**

Human Resource is the most important component of healthcare system. The desired health outcome cannot be achieved in absence of sufficient health workforce. As per norms, a PHC should have 1 Medical Officer and an addition doctor if population is above the prescribed norms. From the study it has been noticed that 7.4% of the PHCs did not have any doctor to look after the patients and though 33% of the PHCs had population above norms but only 14.8% had more than 1 doctor. Apart from these, various literatures brought to notice that female physicians serving in rural areas were meager in number and in our study area it was only 18.5%. Therefore, the study found the prevailing scarcity of doctor in the studied area.

Regarding Nurse Midwifery [includes ANM and GNM] a PHC should have 3 nurses out of which 2 may be contractual. From the study it has been seen that approximately 25% PHCs did not meet the norms prescribed. In context to male-female composition it was seen that reverse is the case regarding nurses as females are majority.

Study has found almost all the PHCs to have 1 pharmacist and 2 pharmacists were found in case of block PHCs. Though as per norms 1 pharmacist is prescribed for every PHC except block PHC but in some PHCs 1 pharmacist was not sufficient for them to perform the task due to huge population coverage. Findings on laboratory technician were same as that of pharmacist. Moreover, report has been provided on non availability of standard laboratory equipment which acts as a barrier in providing accurate laboratory test results.

As per norms a PHC should have 1 ABPM to maintain its accounts efficiently. It was found from the study 14.8% of the PHCs without any ABPM. In such cases it becomes difficult for a health institute to maintain its accounts smoothly. Apart from these, the studied PHCs had 2-3 grade IV staff either permanent or on contractual basis to carry out its functions properly. Thus, it could be seen from the study that in some of the PHCs health staff were not adequate and this drawback can be eliminated through appointment of new staff as required.

## 6.2 Patients Perception on Quality of Healthcare

Table 1 illustrates patients' perception on healthcare quality. Patient perception on service quality is evaluated using 32-items having four sub-scales. The table shows the mean scores and S.D. of every item based on patient's viewpoint.

Patients perceived quality on the services of primary healthcare were rated lowest on items 'ambulance facility', 'maternal healthcare services', 'condition of washroom'. 'Laboratory facility' is one of the lowest rated items apart from above mentioned items whereas 'service charge', 'doctors behavior towards patients' and 'process of hospital admission' were the highest rated items. It is relevant from the study that 3 out of the 4 lowest rated items falls in infrastructure and health facility dimension. The findings suggest low rated health facility items and maternal healthcare services to be improved by taking adequate steps for better PHC service.

## 7. DISCUSSIONS

The findings of the study are consistent with the findings of many studies on facilities of Primary Healthcare Centres. The present study seemed to corroborate with NRHM Report 2011, where 100% PHCs were found functioning in their own building. Our study has similar findings with one of the study conducted in Uttarakhand regarding lack of public transport facility and increase in population density <sup>[12]</sup>.

**Table 1: Patients Perception on Quality of Health Care**

Items	Mean	S.D.
Infrastructure and health facility		
Condition of Building	3.52	.645
Adequacy of room	3.27	.803
Adequacy of medical equipments	3.25	.569
Adequacy of health staff	3.14	.803
Proper sitting and bedding arrangements	3.34	.625
Condition of Toilets	3.04	.621
Cleanliness of hospital and environment	3.26	.585
Drinking water facility	3.41	.695
Electricity facility	3.53	.644
Laboratory facilities	3.07	.563

Table Contd.		
Ambulance facility	1.98	1.225
Interpersonal Aspect and Staff behavior		
Adequate time given by doctor	3.74	.559
Doctor listening skills	3.77	.532
Addressing queries of patients	3.82	.384
Receptionist ability to convey information	3.82	.384
Pharmacist explanation on medicine queries	3.76	.431
Doctor behavior	3.90	.320
Nurses behavior	3.61	.488
Behavior of other health staff	3.56	.499
Helpful nature of hospital staff	3.47	.501
Impartiality behavior towards patients	3.64	.498
Healthcare delivery		
Doctor examination of patients	3.69	.566
Doctor information on illness and treatment	3.67	.584
Doctor prescribed medicines helpful to patients	3.62	.487
Prescribed drugs availability	3.57	.497
Services of nursing staff	3.46	.557
Maternal health services	2.87	.570
Administrative Procedure		
Prompt response to the complaints of patients	3.06	.293
Process of hospital admission	3.90	.296
Stay and discharge service	3.64	.483
Clinical appointment	3.79	.447
Service Charge	4.04	.207

*Source: Primary Data*

Regarding equipment it was found PHCs lacked proper testing facilities and laboratory equipment were not as advance as in private health institutes which act as a barrier in providing accurate results to the patients. Similar findings were observed in other studies. <sup>[13, 14]</sup>

As far as availability of support service is concerned, the study revealed 4% of PHCs were functioning without electricity and 8% were without drinking water facility. Not surprisingly, findings of the study mimics the findings presented in NRHM, Budget Briefs, 2014-15. <sup>[2, 15]</sup> The study also revealed 11% of PHCs to be without usable washroom and most of them had no separate toilets for males and females. Besides this, only 30% of the PHCs had working ambulance in their premises to carry the referred patients. Non-functional ambulance service and lack of beds in government hospitals act as a drawback in providing proper healthcare services. Our findings on support services had resembled findings with other studies. <sup>[13, 14]</sup>

The study has also found public healthcare facilities battling with the problems of inadequate manpower. The findings of the current study have shown 7.4% of PHCs to be without a doctor and female physicians serving in rural areas to be meager in number. It is pertinent to note that there is no provision for gynecologists at these centre. Regarding nurse midwives or staff nurse it was seen approximately 25% of the PHCs did not meet the norms prescribed. Our study has similar findings with NRHM Report, 2014-15 and Garg et.al., <sup>[16]</sup> where the vacancy rates of doctors and staff nurses in public health facilities at all India level is 12% and 23% respectively. One reason for this shortage may be their preference

to work abroad or in private institutes due to wide disparities in salaries and facilities received. Our findings contradict the findings of other researcher [17] on the situation of support staff as majority of the PHCs had pharmacists and laboratory technician post full either on permanent or contractual basis.

The study examines the quality of primary healthcare services in the state of Assam by using a 32-item scale having 4 sub-scales. Patients perceived quality on the health facility, were found to be lowest on items ambulance facility, maternal healthcare services, condition of washroom and laboratory facility whereas 'service charge', 'doctors behavior towards patients' and 'process of hospital admission' were the highest rated items. The current study seems to corroborate the findings of other researcher on user perception of service quality. [9]

The study has potential shortcomings. Physical constraints, to a great extent have compelled the researcher to reduce the size of the research. Moreover, there could be biasness in the responses of the respondents or may be reluctant to give opinions due to lack of experience. This may affect the reliability of the data to some extent. In spite of all the constraints, sincere and serious attempt has been made by the researcher to make the study a meaningful one.

## 8. CONCLUSIONS

Recognizing which service has not been provided acceptably over time helps the hospital staff to put in more efforts and take measures to overcome the problems associated with the service. The results of the study indicate immediate steps need to be undertaken to ensure availability of proper facilities, standard equipment and adequate manpower. Further, the findings urge the policy makers and government to consider patients' perception as well to improve the quality of service and subsequently increase their utilization.

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