

# A Frame Work for Quality Assessment Using Critical Factors of the Primary Health Care: A Case of Rural Area in North Karnataka

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**Abstract:-** India is made up of villages, Primary health care (PHC) are the backbone of these villages in health sector. PHC is not new to India. Due to lack of inadequate resources, inadequate staff and many problems PHCs of India in general and PHCs of Karnataka are in particular are suffering. An attempt is made to assess critical factors affecting the quality treatment. The main objective of this paper is to present a frame work for north karnataka rural area PHC by assessing various factors, considering critical factors using existing model and the literature of health care services for quality treatment and improvement of PHC. This would enable PHC medical officer understand how patient evaluate the quality treatment provided and aid them to allocate necessary resources, facilities, staff etc to various aspects of healthcare, considered to be important by the patients. List of general and critical factors are identified, patients give feedback on these critical factors in turn medical officers and other staff also gives the feed back on these critical factors, finally integrating and comparing critical factors the quality treatment is assessed. The current work could be extended to determine the link between various aspects of PHC and patient satisfaction.

**Keywords:-** PHC, critical factors, quality treatment

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## I. INTRODUCTION

Primary health care in India was given by the Bhore Committee in 1946, which gives the concept of a primary health care as a basic health unit, to provide, as close to the people as possible an integrated curative and preventive health care to the rural population with emphasis on preventive and promotive aspects of health care for 10,000 populations. The health planners in India has visualised the primary health services to the rural population. The Central Council of Health Services to the rural population. The Central Council of Health at its first meeting held in January 1953 had recommended the establishment of primary health care in community development blocks to provide comprehensive healthcare to the rural population. The number of primary health cares established since then. The Mudaliar committee in 1962 had recommended that existing primary health cares should be strengthened and the population to be served by them to be scaled down to 40,000. The Declaration of Alma Ata conference in 1978 setting the goal of Health for All by 2000 A.D. PHC is the first contact point between village community and the Medical Officer. The PHCs were envisaged to provide an integrated curative and preventive health care to the rural population with emphasis on preventive and promotive aspects of health care. The PHCs are established and maintained by the State Governments under the Minimum Needs Programme (MNP)/ Basic Minimum Services Programme (BMS). At present, a PHC is manned by a Medical Officer supported by 14 paramedical and other staff. It acts as a referral unit for 6 Sub Cares. It has 4 - 6 beds for patients. The activities of PHC involve curative, preventive, primitive and Family Welfare Services.

The Directorate of Health and Family Welfare Services is providing comprehensive health care and services to the people of the State through its network. The state has an extensive network of 293 (176 Government) hospitals, 1,297 Primary Health Cares, 622 Primary Health Units/dispensaries and 7,793 Sub-centres with more than 50,000 bed strength. The state is following the National pattern of three-tier health infrastructure in rendering Primary Health Cares, Health Units, Community Health Centres and Sub-Centres. The policy of the Government is to establish one Primary Health Care for every 30,000 population and one primary health unit for every 15-20 thousand population and a Sub-Centre for 5,000 populations. The Community Health Centre (CHC) for every one lakh of population or one out of four PHCs. to be formed to

cater to the health care of the rural mass. In Karnataka there are 1297 Primary Health Cares. Out of total primary health cares north Karnataka has 136 PHCs are located.

One PHC from each of four taluks of north Karnataka were selected using random number strategy. In each PHC, the framework provides the patients with a number of factors, drawn mainly from the PHCs general factors and in particularly critical factors are identified for evaluating the strengths and weaknesses of PHC, targeting their improvement areas, setting up an action plan for improvements, and tailoring a special part of PHC.

## II. LITRATURE REVIEW

The concept of service quality is well researched in the literature. Judith E. Arnetz et al (1996) developed instrument to assess patients' perceptions of the quality of hospital services, staff work environment and overall satisfaction for the purpose of providing feedback to hospital staff. This information would be used for quality improvement efforts within the hospital. Unique to this instrument are questions regarding patients' perceptions of the hospital staff work environment. The results revealed that the questionnaire demonstrated valid and reliable properties. Slim Haddad et al (1998) a 20-item scale is developed which includes three subscales related to health care delivery, personnel and facilities and tested for reliability and validity. He documented the user's opinion on the quality of primary health care services. 241 people from one city and two villages in Upper Guinea are responded to the questionnaire. Reliability was estimated by analyses of internal consistency and the Cronbach's alpha coefficient. A variety of statistical procedures were used to test factorial validity, trait validity and nomological validity. S. Saxena et al (1998) quality of life is becoming an important component of overall assessment in health care settings. He has conducted Qualitative and quantitative work at the Delhi centre as a part of the WHOQOL (World Health Organization Quality of Life) project at 15 centres. The pilot field trial at Delhi was conducted on 304 adult subjects using the 236-Item questionnaire with 5 point scale. Pilot field trial data, item reduction could be done to develop a 100-item version (WHOQOL-100, Hindi). Psychometric properties of this instrument are satisfactory. R. D. Sharma (1999) the concept of patient satisfaction has encouraged the adoption of marketing culture in service sector including health care services. Developed an instrument to capture the behaviour of doctors and medical assistants, quality of administration and atmospherics. He suggests strategic actions for meeting the needs of the patients of private health care sector more effectively. Used 9 factors and 90 item questionnaire with 4 point likert scale. Syed Saad Andaleeb (2000) compares the quality of services provided by public and private hospitals. The quality of hospital services would be contingent on the incentive structure under which these institutions operate. Patient perceptions of service quality and key demographic characteristics were also used to predict choice of public or private hospitals. The model, based on discriminant analysis, demonstrated satisfactory predictive power. SERVQUAL dimensions responsiveness, assurance, communication, discipline and baksheesh with 7 point likert scale used to develop questionnaire. Manlu Liu et al (2000) described to assess the quality of service provided by public and private hospitals in China. Questionnaire contained 39 statements with 5 point likert scale to assess health service quality under seven broad dimensions of service quality namely: tangibility, reliability, responsiveness, assurance, empathy, technical quality and medicine quality management.

Pio T. et al (2001) non-concurrent cohort study was done to assess the quality of care rendered to pneumonia patients admitted in a tertiary government hospital, using quality indicators. Reviewed the medical charts of 153 adult patients. Four categories of variables were used case confirmation and exclusion criteria indicators (previously listed), severity of illness indicators, process of care and outcomes of care. A quality indicator is expressed as ratio with the denominator defined as "all patients eligible to receive care" and the numerators as "all patients who actually received care." From quality indicators good and poor performance indicators obtained. Jose Labarere et al (2001) developed a brief French language, generic, self administered questionnaire to measure inpatient satisfaction. Survey is made by mailing 93 items to random sample of 1000 medical, surgical and obstetrics inpatients within 2-4 weeks of discharge. Patient responses analysed, content validity judged by comparing with existing instruments and reliability estimated by calculating alpha.

C Jenkinson et al (2002) determined what aspects of healthcare provision are most likely to influence satisfaction with care and willingness to recommend hospital services to others and, secondly, to explore the extent to which satisfaction is a meaningful indicator of patient experience of healthcare services. Postal survey of a sample of patients who underwent a period of inpatient care. Patients were asked to evaluate their overall experience of this episode of care and to complete the Picker Inpatient Survey questionnaire on specific aspects of their care. Patient satisfaction scores present a limited and optimistic picture. Detailed questions about specific aspects of patients' experiences are likely to be more useful for monitoring the performance of various hospital departments and wards and could point to ways in which delivery of health care could be improved. A A J Hendriks et al (2002) established psychometric properties of satisfaction with hospital care questionnaire for measuring patient satisfaction and evaluations of hospital care quality. Questionnaire with 57 items addressing 13 aspects of care introduced to patients and staff members of four hospital wards. The data analysed within the framework of generalizability theory. The reliability establishes both patient and overall quality of hospital care.

Margaret S Westaway et al (2003) Donabedian's structure, process and outcome model is used to identify the dimensions of patient satisfaction for diabetic patients and determine the effects of demographic characteristics on these dimensions. Cross sectional analytical design is used with a questionnaire, comprising demographic characteristics, general and mental health items. Questionnaire administered to South African black diabetic outpatients of two hospitals and measured reliable and valid patient satisfaction scale. Lee Pui-Mun (2004) healthcare service is defined as all medical support services, such as; nursing, food and beverage, ward service, counter service, and other ancillary services. Besides ensuring excellent clinical care, hospitals should also focus on providing quality service to their patients and visitors. Focused on how hospitals could better manage their services and harness information technologies to enhance their services. Questionnaire survey is conducted on 400 customers who had previous experiences in one of the many hospitals of the healthcare system in Singapore. Customer satisfaction levels measured using a consumer satisfaction index. Recommend IT enhanced service quality in the healthcare industry. Isabelle Gasquet et al (2004) developed psychometric standards, a self-administered generic outpatient questionnaire exploring opinion on quality of hospital care. Qualitative phase conducted to generate items and identify domains using critical analysis incident technique and literature review. A list of easily comprehensible nonredundant items defined using Delphi technique and a pilot study on outpatients. Quantitative validation phase comprised a multicenter study in 3 hospitals, 10 departments and 1007 outpatients, designed to select items, identify dimensions, measure reliability, internal and concurrent validity. 27-item questionnaire used comprising 4 subscales (appointment making, reception facilities, waiting time and consultation with the doctor). Good estimation of patient opinion on hospital consultation performance obtained with these questionnaires. Edward Kelley et al (2006) set out a conceptual framework for the health care quality indicator. Tackled: what concepts, or dimensions, of quality of health care should be measured and how, in principle, should they be measured. indicator set should be based on three main criteria: i) the importance of what is being measured ii) the scientific soundness of the measure and iii) the feasibility/cost of obtaining data. Develop a set of indicators that reflect a robust picture of health care quality that can be reliably reported across countries using comparable data. Pilot work carried out on an initial set of 17 indicators to explore the technical issues associated with reporting health care quality internationally. Represent the main disease and client groups in the population, and the most important preventive, curative and caring interventions for these groups. It strives to provide as much transparency as possible on the policy relevance, scientific soundness and international comparability of the proposed indicators.

P. Padma et al (2008) determined the dimensions of service quality in Indian hospitals, from patients' perspective enable hospital managers understand how patients evaluate the quality of care provided and aid them to allocate resources to various aspects of healthcare. Questionnaire developed for measuring the dimensions of hospital service quality and is being validated. She proposed that healthcare service quality consisted of eight dimensions, namely, infrastructure, administrative procedures, personnel quality, process of clinical care, safety indicators, corporate image, social responsibility and trustworthiness of the hospital. Mayuri et al (2008) proposed that healthcare service quality consisted of seven dimensions, namely, infrastructure, personnel quality, process of clinical care, administrative processes, safety indicators, overall experience of medical care and social responsibility. They study found that all the dimensions were significant predictors of patient satisfaction. O.V. Mejabiet al (2008) provide insight into the nature and characteristics of consumer focused service quality, as it pertains to the Nigerian hospital setting, through identifying a workable measurement scale and determining the underlying service quality dimensions. The instrument had a battery of 39 consumer focused service quality attributes on which respondents rated the hospital on importance and performance. The dimensions confirmed through factor analysis of importance data, performance data and computed quality data. The results indicated eight dimensions - resource availability, quality of care, condition of clinic/ward, condition of facility, quality of food, attitude of doctors and nurses, attitude of non-medical staff and waiting time for service, best described the service quality phenomena, producing Cronbach-alpha reliability coefficients of 0.74 to 0.94. P. K. Turkson (2009) study aimed at finding out clients' perceptions of the quality of healthcare delivery at the district level in rural area. 803 patients selected and interviewed after visits to health facilities using a pretested questionnaire. The questionnaire had 32 questions (with 23 closed) and took about 20 minutes on average to administer. The questions covered socio-demographic issues, waiting time and interactions with service providers. The study found that generally the quality of healthcare delivery perceived to be high for most of the indicators used. Identified patient, community, staff and operational problems constraining the effectiveness and efficiency of healthcare.

Rashmi et al (2010) evaluated client satisfaction with the government approach in primary health care. Client satisfaction was determined by systematic random sampling of clients attending the basic health services. The questionnaire covered six parameters duration to wait and fulfilment of health care facility, availability of services, facilities and equipments, interpersonal quality, professional competence and skill, satisfaction of efficiency to treat. Differentiated the satisfaction by health services for different sector of population. Tashonna R et al (2011) developed questionnaires to assess patient experiences with inpatient (I-PAHC) and with outpatient (O-PAHC) care in a low-income setting. Questionnaires were administered in person by trained

interviewers. Construct validity assessed with factor analysis; convergent validity assessed by correlating summary scores for each scale with overall patient evaluations, and reliability assessed with Cronbach's alpha coefficients. The I-PAHC questionnaire includes 25 questions that comprise 5 factors (communication with nurses, communication with doctors, physical environment, pain management and medication communication) and the O-PAHC questionnaire includes 23 questions that comprise 4 constructs same I-PAHC factors except pain management. Oyvind A Bjertnaes (2012) study estimates the effects of different predictors of overall patient satisfaction with hospitals, including patient reported experiences, fulfilment of patient expectations and socio-demographic variables. Data collected using a national patient experience survey of 63 hospitals in the five health regions in Norway. Postal questionnaires were mailed to 24141 patients after their discharge from hospital. Thirteen variables significantly associated with overall patient satisfaction: two variables about fulfilment of expectations, eight about patient-reported experiences and three socio-demographic variables. The study showed that both fulfilment of expectations and patient-reported experiences are distinct from but related to overall patient satisfaction.

### III. RESEARCH PROBLEM

The existing literature on quality of healthcare throws light on various important aspects of rural area PHC of north Karnataka

- Dimensions of PHC service quality
- Differences in services offered by PHC
- Relationship between service quality and stake holder satisfaction
- Critical factors of PHC

Even though significant research has been conducted on Health care service quality dimensions, a frame work combining the existing facilities, factors, models and the literature is lacking. Hence, this paper attempts to conceptualize quality treatment of PHC based on its critical factors.

### IV. CRITICAL FACTORS OF PHC

After a comprehensive review of existing literature, a framework for assessing quality treatment in PHC is defined with structure, process and outcome as three components were identified. 'Structure' is the quality of availability of human, financial, technical resources (investment). 'Process' is the quality of how the resources are applied (stewardship) and 'Outcome' is the quality of what results are achieved (performance). Further the critical factors are grouped under these three components. The following are the critical factors are as below:

- A. Infrastructure
- B. Equipment
- C. Supplies
- D. Administrative procedures
- E. Clinical wide procedures
- F. Personnel training
- G. Technical competence
- H. Client interaction
- I. Quality treatment

#### A. Infrastructure

The health care infrastructure in rural areas in India has been developed as a three tier system and is based on the population. The infrastructure includes the tangible features of a service delivery (including building, layout, appearance of the PHC/facility, signage, availability of resources, etc). It is also referred to as man-made physical environment or service scapes. The facilities should not only be visually appealing but also appear hygienic, particularly in healthcare service.

#### B. Equipment

Technological capability of a hospital including equipment to test and treat various ailments is a part and parcel of the structure. The availability, maintenance and periodic stock verification of necessary functional equipments to deliver the assured services of the PHC is necessary without which it is difficult to treat the patients.

#### C. Supplies

All the drugs, laundry and dietary facilities in PHC is made available as per requirement and to meet the necessity of the patients. In addition they should be maintained through periodic stock checking and appropriate record maintenance. Facilities for local purchase of drugs in times of epidemics/outbreaks/emergencies should be available. Also PHC with an ambulance is suggested for transport of patients.

#### D. Administrative procedures

Administration of hospital includes process of admission, stay and discharge of patients. Many studies have reported that patients are not happy with the long waiting times for diagnosis, treatment, etc in the PHC across north karnataka. The ease of getting appointments, ambulance services, simplicity of admission and discharge, etc. all are essential in ensuring a hassle free treatment to patients. Efficient administration makes patients appreciate the services offered by the PHC are better.

#### E. Clinical wide procedures

This is the core service or primary service of PHC. It explains “whats” of a service including the width and depth of clinical services includes medical care/general care, maternal and child health services or from the entry of PHC, treatment/diagnosis, exit of PHC and after treatment tenure. This aspect of service is taken for granted by the customers. When a hospital fails in this, patients do not attach any importance to other aspects i.e., even if the personnel are friendly in a hospital, the patient may not perceive the service to be of high quality if the doctor lacks the necessary competence and skill. At the same time, this aspect of service is difficult to evaluate as patients lack to judge the quality of treatment provided. In this paper, this includes as very critical factor in itself and the treatment outcomes experienced by the patient [1].

#### F. Personnel training

A major pre-requisite for providing quality health care service is upgrading the skills and knowledge of all health personnel as well as key personnel of related sectors. The states are to be encouraged to develop strategy so that there is ownership. The district must ensure that all personnel are exposed to the training programs at regular specified intervals. There are three types of training they are induction training (four weeks mandatory), in-service training (at least once in two years) and refresher training (once in two years). These types of training are must for the staff of PHC to achieve their targets and to give the quality treatment for the patients. A plan should be developed which could give thrust on utilization of trained personnel to assure quality following the assurance guidelines should be formulated and implemented. In addition to this distance learning by e-learning/web-based training, teleconferencing etc help in development of niche expertise for existing manpower, as also follow up training for specialist.

#### G. Technical competence

The staff of PHC should have the Knowledge of their respective education relevant to the job, and skill in the exercise of tackling the patients, practices required for successful accomplishment of a quality treatment for the wide various different kinds of patients.

#### H. Client interaction

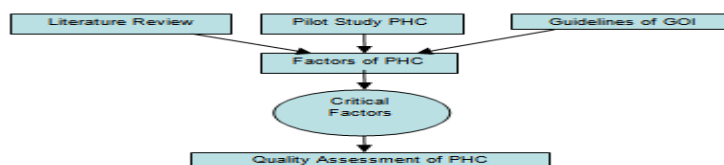
It helps in PHC (providers) become more aware of the importance of client-provider interactions, especially family planning counseling. Patients will discuss the stages of good family planning counseling. Patients will identify elements and techniques of good family planning counseling and determine why good family planning counseling is important in improving the quality of reproductive health services. Patients will take a critical look at their personal values and attitudes regarding family planning counseling practices, and consider the impact of these values on their current practices.

#### I. Quality treatment

Quality treatment in PHC is nothing but the overall patients satisfaction starting awareness, infrastructure, administration process, clinical process, equipment, training, supplies, technical competency and many other factors as per illness and diseases based on the various different kind of patients visiting the PHC in north Karnataka region as per the resources and facilities availability.

### V. METHODOLOGY

Based on the area and population the PHC is established by Government of India (GOI). By considering guidelines, rules, regulations and policies of resources, facilities and amenities given by the Government of India, comparing with existing PHC and by the literature review conducted, various factors are identified to assess the quality of the PHC. These factors are processed through SPSS software based on the value ( $\alpha \geq 0.7$ ) the factors are defined as critical factors. Considering these critical factors in each component and variables questionnaire is prepared with grading of five (5) point likert scale. Finally this questionnaire is given to patients, staff of PHC and other stake holders to assess the quality of the PHC by identified critical factors.



Staff	Existing
Medical Officers( Residential)	02-Male-1, Female-1
Pharmacist	01
Auxiliary Nurse Midwives (ANMs)	01
Health Workers	06-male-3, female-3
Village Level Worker	01
Supervisor	01
Laboratory Technician	01
Class-IV	01
Driver	01
Community Felicitator	01

**Fig.1:** Framework for identifying critical factors for quality assessment of primary health care (PHC).

## VI. DISCUSSION

PHC plays a very important role to protect the rural health particularly health of women. India's primary healthcare systems based on the Primary Health Care (PHC) and provide treatment free of cost. Primary care is focused on immunization, prevention of malnutrition, pregnancy, child birth, postnatal care and treatment of common illnesses.

Women constitute half of population. Women's participation in economic activities is more than men. Majority of women from rural areas as well as urban areas are participating in economic activities as well as household activities. Majority of women from rural areas are working in the unorganised sector and paid less. They are suffering from many hazardous diseases and their health status is degrading. Water borne diseases also contribute 70% of the health risk to the community in the rural area of north karnataka. To tackle the all health problems of villagers in general and women in particular Primary Health Care in north karnataka is playing very important role to provide the health facilities to rural people.

Primary health care and subcenters rely on trained paramedics to meet most of their needs. The main problems affecting the success of primary health centers are the predominance of clinical and curative concerns over the intended emphasis on preventive work and the reluctance of staff to work in rural areas. In addition, the integration of health services with family planning programmes often causes the local population to perceive the primary health centers as hostile to their traditional preference for large families. Therefore, primary health centers often play an adversarial role in local efforts to implement national health policies.

Most essential drugs are offered free of charge in these hospitals. In-hospital treatment costs depend on financial condition of the patient and facilities utilized by him but are usually much less than the private sector. The Fifth (1974-78) and Sixth Five-Year Plans and (1980-84) included programs to assist delivery of preventive medicine and improve the health status of the rural population. The sixth plan aimed at training more community health workers and increasing efforts to control communicable diseases. The table 1 and table 2 shows the three tier system and general staff pattern of PHC in India.

**Table I:** Three Tier Systems of PHC

Centre	Population Norms	
	Plain Area	Hilly/Tribal/Difficult Area
Sub-center	5000	3000
Primary Health Care	30,000	20,000
Community Health Care	1,20,000	80,000

**Table II:** General Staffing Pattern in PHC

Finally, the 09 critical factors identified were used to make up the quality of health sector index (QHSI) is used to assess the quality of PHC. The QHSI construction is based on the equation as shown below:  

$$QHSI = \{ \sum (WtA * A + WtB * B + WtC * C + .....+ WtN * N) \} / (N * 5)$$
 Where A, B, C,...N are the mean satisfaction ratings to survey question and the critical factors. WtA-N are relative importance weights given by the stake holders to each of critical factors. N is the number of the critical factors.

Based on the QHSI the PHC are rated, the QHSI gives an input for the improvement of the PHC and also to draw the strength and weakness of the PHC. However QHSI can be used for any other statistical measures for the overall benefit of the health care in the society.

## VII. CONCLUSION

In this paper a framework to assess the PHC is made to find the quality through critical factors using QHSI. The calculated QHSI is used for various assessment of health sector in India. The identified critical factors are paramount to assess the quality in particular for north Karnataka rural area. Hence the current framework may help the PHC to monitor and improve their own performance in comparison with guidelines of GOI, other PHC's and input from various different kinds of patients through questionnaire. As an extension to the current work, the link between critical factors and patient's satisfaction can be explored for outcome of quality assessment of PHC for a particular rural area.

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