National Quality Assurance Standards (NQAS) Accreditation in Public Health Facilities: An Impact Assessment in Karnataka, Maharashtra and Chhattisgarh

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Abstract: The study aims to assess the impact of National Quality Assurance Standards (NQAS) accreditation on quality of care through healthcare staffs' perception as well as through performance outcome. The study followed a cross-sectional survey design to collect data from staff of the selected healthcare facilities across Karnataka, Maharashtra and Chhattisgarh. A total of 195 healthcare staff from 8 hospitals was recruited for the study. The high score for the variable 'Quality Result' indicates that the staff perceived an improvement in quality comparing before and after the NQAS accreditation process. In terms of Benefits of NQAS accreditation subscale, the mean score of 4.48 indicates that staff perceived improved team-work and productivity in the hospital as an outcome of NQAS accreditation. Reward and Recognition had the lowest agreement score, while the Staff Involvement in the NQAS accreditation subscale had the highest agreement score. Significant differences were observed specially between PHCs and CHCs in addition to PHCs and DHs. The qualitative insights indicate several advantages of NQAS accreditation, such as public hospitals are competitively similar to private hospitals, having a sense of pride and satisfaction among staff, and also study participants perceive NQAS accreditation is a good tool for improving quality of healthcare.

Keywords: NQAS, Accreditation, hospitals, Quality Improvements, Quality of Care, India.

Introduction

Globally, a growing number of countries, both developed and developing, are adopting a system of healthcare assessment to get hospital accreditation (Greenfield & Braithwaite, 2008). The accreditation is based on a systematic assessment of health care facilities against accepted predetermined standards by an authorized body, either government or nongovernment. Though accreditation is mainly dealt with quality management, but, its effect on improving service is debatable. It is being argued that accreditation standards helps to improve quality in health care and strengthen patient safety (Institut for Kvalitet Og Akkreditering I, 2009; Joint Commission International, 2018; Nicklin, 2013) and they are designed to encourage continuous quality improvement efforts within the accredited institute(Rooney and van Ostenberg, 1999).Though the accreditation process is believed to be beneficial and many countries in the developing world are considering accreditation programmes, however, the research studies to assess its impact are scanty (Buetow and Wellingham, 2003). India was also one among developing countries to develop and implement a national accreditation programme (MoHFW, 2013), since its

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implementation in 2013, little is known on its impact on quality of care in Indian hospitals. Hence, the present study aims to assess its impact on quality services through the lens of health care professionals, as well as performance outcome.

National Quality Assurance Standards (NQAS)

With to improve the quality of Health care services at public health facilities, the Ministry of Health & Family welfare (MoHFW), Government of India has implemented a comprehensive accreditation process. The MoHFWwith the support of its flagship programme, National Health Mission (NHM), launched a National Quality Assurance Standards (NQAS) in 2013. NQAS have been developed keeping in mind the specific requirements for public health facilities which have been derived by global best practices. NQAS are currently available for District Hospitals, CHCs, PHCs and Urban PHCs. Standards are primarily meant for providers to assess their own quality for improvement through predefined standards and to bring up their facilities for certification (MoHFW, 2013).

The NQAS are broadly arranged under 8 "Areas of Concern"– Service Provision, Patient Rights, Inputs, Support Services, Clinical Care, Infection Control, Quality Management and Outcome. These standards are ISQua [4] (International Society for Quality in Health Care) accredited and meets global benchmarks in terms of comprehensiveness, objectivity, evidence and firmness of development (MoHFW, 2013).

Objectives
- To assess the impact of hospital accreditation on quality of care through health care staffs' perception.
- To determine the impact of hospital accreditation on performance outcome through analyzing service delivery indicators.

Materials and Methods

Ethical consideration
The study was approved by the Ministry of Health and Family Welfare (MoHFW), Government of India, under the Annual Work Plan (AWP) of Population Research Centres (PRCs). Further, official communications through the NHM (National Health Mission) mission Director and State Programme Managers (SPM), with the District Health Officers (DHO) and District Surgeon (DS) was made through formal letter mentioning Ministry of Health & Family Welfare (MoHFW) Government of India's approval letter to take up the study. Moreover, in all the selected health facilities during the data collection, having finished informing the purpose and objective of the study, the researchers obtained oral consent from the study participants. Participants were also informed that their participation was on a voluntary basis, and the information obtained from them was kept confidential and will be used only for the research purpose.

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[4]ISQua is an international body which grants approval to Accreditation Bodies in the area of healthcare as a mark of equivalence of accreditation programmes of member countries.

Study Area

The present study was conducted in a total of eight health facilities across Karnataka, Maharashtra and Chhattisgarh. It is to be noted here that with the directions of Ministry of Health and Family Welfare (MoHFW), Government of India, the data collection was done among the districts which have been allotted by the MoHFW to Population Research Centre (PRC), Dharwad for monitoring and evaluation of National Health Mission (NHM) Programme Implementation Plan (PIP) during 2019-20. Hence, the health facilities which have been certified under NQAS were covered in these Districts, among these three DHs, one CHC and four PHCs have been covered. The information received from MoHFW, on number of healthcare facilities successfully qualified and awarded the NQAS certificate, states that as on 30th August, 2021 total 367 health facilities have received NQAS award. Of them, 299 health facilities have received the award without conditionality, and remaining 68 health facilities have awarded certificate with conditionality. The details list of the total number of healthcare facilities awarded NQAS certification by type of healthcare facilities in each State/Union Territories was provided in the Appendix 1.

Study design

The study followed a cross-sectional survey design to collect data from staff of the selected healthcare facilities across Karnataka, Maharashtra and Chhattisgarh, which have successfully passed the accreditation under NQAS. Furthermore, to see the impact of accreditation on performance outcome, the retrospective service delivery data of two years before and after the accreditation have been collected to assess the impact of the NQAS accreditation from selected healthcare facilities.

Data Collection and tools

Multiple strategies have been adopted to achieve the study objectives. First, discussion has been held with the person in-charge in the NQAS implementation at the health facility to understand his/her experience in implementation of NQAS and its certification. The data collection occurred through individual interviews, recorded and guided by the statements: "Tell me about the NQAS certification system implemented in this public hospital". For this a semi-structured interview guide designed based on knowledge extracted from published literature was used to capture the perception of NQAS. This interview guide covers themes of quality management, effect of NQAS, etc. To capture broad experiences of NQAS and how its accreditation had affected their work, the study recruited the head of the facility or a person who headed the implementation process of the NQAS.

Second, to understand the effect of NQAS, the perception of staff in the selected healthcare facilities were gathered through pre-designed self-administered interview questionnaires. The instruments to evaluate the effect of accreditation on quality health care and patient safety were scanty in the available literature. And there is no such instrument that can be used universally. Hence, a suitable scale that was developed in previous studies, preferably (Shortell et al., 1995) and (Pomey et al., 2004) was used by modifying to fit local culture with no changes in content. Hence, the NQAS implementation and accreditation experience of the staff is captured through a score on five-point Likert scale; a total of nine scales and subscales were used

from the above said literature to rate the score. The description of Likert scale items and questions are given in the Appendix 2.

Third, to assess the impact of the NQAS accreditation, the retrospective service delivery data of outcome indicators for two years before and two year after the accreditation have been collected from selected healthcare facilities. The data collection for the study was conducted at different points of time along with NHM-PIP monitoring studies during December, 2019 to February, 2020.

Selection of respondent

The targeted respondents for this study were staff of selected healthcare facilities who are actively involved in hospitals' core activity of providing healthcare services, and are more likely to feel the impact of accreditation on quality. In each facility, especially, in DHs and SDHs different departments have been covered to employee the respondents for the present study. The sample was selected both from clinical and non-clinical staff, who are actively involved in providing healthcare services.

Moreover, for sample selection the criteria of being active in the hospital since the initiation of NQAS implementation and/or at least present at last audit of external evaluation for NQAS certification were used. The sample was non-probabilistic and established for convenience. Finally, the sample consisted of 195 respondents: 45Specialist/Doctors, 133Paramedical staff and 17 other staff including administrative staff. Further, staff members who were present during our field visit were invited individually to participate in the study after briefing the objectives of the study and getting oral informed consent. All the study participants were assured about confidentiality and anonymity.

Analysis Plan

Post transcribed, all reports of the qualitative interviews were repeatedly read, with common arguments highlighted and treated, always keeping with the original meaning of the words. In presenting the results, excerpts/extracts/verbatim of the reports were edited to eliminate grammatical errors without, however, incurring in changes in the original content (i.e., the reports). In addition, whenever necessary, we added further compounded-terms in brackets to facilitate the understanding of the speeches by the reader.

For quantitative cross sectional data collected from self-administered interview questionnaires have been entered using Microsoft Excel sheet, and then the data was analyzed using the Statistical Package for Social Sciences (SPSS) software version 20.0(IBM Corp. Released, 2011), and analyses were carried out at the 0.05 significance level. Data analysis steps are detailed below. First, to describe the characteristics of the respondent, univariate statistics were performed. Second, mean scores were computed for every scale and subscale based on the number of available items. Further, to compare mean scores for each scale and subscale across health facilities, statistical analysis was performed using Welch's ANOVA. Welch's analysis of variance is an excellent analysis that one can use all the time for One-way analysis of variance. Welch's ANOVA is preferred against traditional ANOVA tests, because it helps toget out of a tricky situation with an assumption. It completely wipes away the need to worry about the assumption of homogeneous variances. Similarly, to identify significant

differences between specific groups, we performed a pair-wise comparisons post hoc test. For that the Games-Howell comparison method was used as a multi-comparison technique. Differences were considered significant when P≤0.05.

Results

With the intention to capture the effect of NQAS accreditation, discussion has been held with the person in-charge for the NQAS implementation at the health facility level. Hence, in total we interviewed 8 professionals from selected healthcare facilities. In the analysis of the interviews, the following thematic categories were perceived: 1) Benefits of NQAS certification; 2) NQAS certified hospitals like private corporate hospitals; and 3) Pride/Satisfaction for working in the NQAS certified hospital.

Benefits of NQAS certification

According to speeches of the participants it reflects that the NQAS certification has brought a lot of improvement in public health facilities in terms of managerial and medical care areas. In this regard the respondents mentioned that the NQAS certification has provided the opportunity of getting an upgraded health care service in public healthcare facilities to its users, which is the result of the competent leadership in planned implementation of the NQAS and the commitment of its employees.

Regarding the roles and responsibilities of staff in the NQAS certified hospital, it is noted that the responsibility exercised by facility in-charge and employees are referred to as competent and commitment, for having achieved the NQAS accreditation, respectively. It can be noted in the excerpt:

> *.......our first meeting [NQAS related] was started at 9pm and lasted till 2 am. Then I learnt that this team is very interested in this NQAS and we can achieve our goal [accreditation certificate] (Interviewee 1).*
> *.....having this type of privilege [accreditation certificate] is very important for staff of a public hospital.....it gives respect among other staff and shows the ability of the hospital teamwork......and also it shows the competent and commitment of our staff [...] (Interviewee 1).*

Another aspect emphasized by the interviewees in this research refers to the interest and team spirit among the staff, which sets it above other health facilities in choosing to implement the NQAS procedure. In the following report, this spirit is clearly evident:

> *I see that our staff are very interested, cooperative and committed to do anything assigned to them. In other hospitals this type of environment is not there. Hence, here always innovative things happen [....] the other hospitals are stagnant (Interviewee 6).*

Among the benefits reported by the participants of being part of the NQAS certification, it has brought a proper work flow, and improved services that support effective, fast, and needed diagnosis to meet the demand of the patients:

Now the waiting time hasdecreased a lot sincehere [NQAS certified hospital], earlier patients need to wait hours together, but now it's fast. So, it's quick now to get services here. It is different from other public hospitals. So, I find it very rewarding (Interviewee 8).

The cleanliness and equipment of the hospitals are also clearly marked by the respondents regarding the comfort of the accommodation:

[......] As a Women Hospital it is very much equipped for the mother and child services, the SNCU in the hospital is very well equipped, so that it can even compete with Medical colleges and corporate hospitals. Hence, in this hospital [NQAS certified hospital] anyone can feel the difference of having quality and comfort (Interviewee 6).

Though, the other excerpts refer to general aspects, participants also associate the existence of quality and technology with the NQAS certification:

I think it is the accreditation which made it possible that today we have many things in our hospital; rain water harvesting, herbal garden, TV, camera, etc. [....]

[....] it [NQAS certified hospital] is very well equipped, and provides quality services with hygiene, even though it is a public hospital [....] (Interviewee 2).

NQAS certified hospitals like private corporate hospitals
Usually, it is perceived that the condition of the public hospitals in India is poor and needs much improvement. Through these measures the government wants to improve these conditions, so that users who have poor economic backgrounds could enjoy quality care like no less than private hospitals. This is evident in the following speeches of respondents.
[...] some of our patients think that it [NQAS certified hospital] is a private hospital, and we say to them: no, it is a public hospital [...] (Interviewee 2).
My neighbors tell me that your hospital is so good, very clean; we will not go to a private hospital anymore [...], patients will come here even from Medical college and they say you do whatever you do, we will not go there. So, that's very good (Interviewee 6).
Another speech emanating from the participants of this study, which shows the similarities of the NQAS certified public hospital to a private hospital, as follows:
*I think patients have changed their view towards it [NQAS certified hospital], now-a-day they perceive our hospital is better than any private hospital [...].....
It's a delight to hear this from the people [....] (Interviewee 7).*

Pride/Satisfaction for working in the NQAS certified hospital
Moreover, in addition to the above discussed advantages of NQAS accreditation, the pride and/or satisfaction of being part of a public hospital certified by NQAS, can be noted in the speeches of the study participants.

Being a certified institution in a vast network of public hospitals in India, where the condition of public healthcare facilities are perceived poor, certainly provides a very prideful and satisfactory feeling for staff. This is clearly evident from following reports:

After successfully going through the process [NQAS certification] and receiving an award it makes us [Staff working in NQAS certified hospital] more confident and brings a good image among the healthcare staff fraternity (Interviewee 5).

One another staff stated:

.....it is a wonderful feeling [working in an accredited public hospital]. Then, it's [NQAS certification] gives an identification for our work and commitment (Interviewee 4).

In addition to pride and satisfaction staff reported a sense of desire to reach new stages/level:

.....we have done this [NQAS certification]. And we are ready to do anything now for Quality improvement (Interviewee 1).

The above reports indicate that the NQAS accreditation process demands hard work and dedication of staff from every hierarchy, but it is also evident from the speeches of the participants that the resulting feelings of satisfaction makes it possible to achieve.

Analysis of cross-sectional quantitative data

Profile of the study respondents

Table 1 presents the profile of the study participants, as it is observed in the table, most of the study participants were between 30 and 44 years of age (58%), similarly, little less than three-fourths are in the age group of less than 45 years. The majority of the sampled respondents were female (64%). Moreover, as educational qualification is concerned, the vast majority of the study participants held a Diploma course (41%), followed by Bachelor's degree (26%). Whereas, another 16% of the study participants held a master's degree and, remaining were passed pre-university or less.

Furthermore, most of the respondents were in the working category of paramedical staff (68%), further, 23% Specialist/Doctors participated in the study and, around 9 per cent other staffs, including administrative staff, participated. Majority of the respondents participated in the study were from DHs (75%), followed by CHCs (8%) and PHCs (16%).

Table 1: Profile of the study respondents

Background characteristics	N	%
Age		
Less than 30 Years	27	13.8
30-34 Years	30	15.4
35-44 Years	84	43.1
45-54 Years	41	21.0
55 and above	12	6.2
Missing	1	0.5
Gender		
Male	68	34.9
Female	125	64.1
Missing	2	1.0
Education qualification		
Masters degree	31	15.9
Bachelors degree	51	26.2
Diploma	80	41.0
<=Pre-university	30	15.4
Missing	3	1.5
Designation		
Specialist/Doctors	45	23.1
Paramedics	133	68.2
Others	17	8.7
Missing	0	0.0
Participants across NQAS accreditation health facilities		
DHs	147	75.4
CHCs	16	8.2
PHCs	32	16.4
Missing	0	0.0
Total	195	100

Note: PHCs = primary health centres; CHCs = community health centres; DHs = district hospitals; NQAS = national quality assurance standards.

Table 2: Distribution of the score of study variables basis of NQAS implementation and accreditation experience of the staff

	Overall Mean (SD)	Confidence Interval (95%)	Mean (SD) for PHCs	Mean (SD) for CHCs	Mean (SD) for DHs	P-value
Quality results[a,b]	4.43 (0.37)	4.38-4.48	4.64 (0.22)	4.14 (0.28)	4.42 (0.38)	<0.001
Leadership, commitment and support[a]	4.51 (0.39)	4.45-4.56	4.80 (0.23)	4.24 (0.31)	4.47 (0.40)	<0.001
Strategic quality planning[a]	4.47 (0.37)	4.42-4.52	4.67 (0.23)	4.25 (0.33)	4.45 (0.37)	<0.001
Education and training[a]	4.54 (0.49)	4.47-4.61	4.84 (0.30)	4.44 (0.51)	4.48 (0.50)	<0.001
Reward and recognition[a,b]	4.30 (0.59)	4.22-4.39	4.56 (0.46)	3.85 (0.47)	4.29 (0.59)	<0.001
Quality management[a]	4.44 (0.44)	4.38-4.51	4.70 (0.29)	4.23 (0.41)	4.41 (0.45)	<0.001
Use of Data[a]	4.34 (0.45)	4.28-4.41	4.59 (0.34)	4.20 (0.29)	4.31 (0.46)	0.002
Staffinvolvement in NQAS accreditation	4.55 (0.38)	4.49-4.60	4.68 (0.31)	4.38 (0.44)	4.53 (0.38)	0.026
Benefits of NQAS accreditation[b]	4.48 (0.42)	4.42-4.54	4.65 (0.30)	4.20 (0.37)	4.47 (0.43)	0.002

Note: [a]= Significant difference between PHCs and DHs; [b]= significant difference between CHCs and DHs; SD = standard deviation; PHCs = primary health centres; CHCs = community health centres; DHs = district hospitals; NQAS = national quality assurance standards.

Healthcare staff's perception on impact of NQAS

The NQAS implementation and accreditation experience of the staff is captured through a score on five-point Likert scale; a total of nine scales and subscales were used to rate the score. The scores based on these scales are presented in Table 2. As observed in the table, the score on the scale that measures Quality result was 4.43 (SD, 0.37). This indicates that the staff perceived an improvement of Quality Result in the hospitals as an outcome of NQAS accreditation. Moreover, in terms of Benefits of NQAS accreditation subscale, the mean score of 4.48 (SD, 0.42) indicates that staff perceived improved team work and productivity in the hospital as an outcome of NQAS accreditation. Reward and Recognition had the lowest agreement score (mean, 4.30; SD, 0.59), while the Staff Involvement in the NQAS accreditation subscale (mean, 4.55; SD, 0.38) had the highest agreement score. The mean score for all scales and subscales were significantly different across hospitals, with the exceptions of the scale on Use of Date, Staff Involvement in NQAS accreditation, and Benefits of NQAS accreditation. Significant differences were observed specially between PHCs and CHCs in addition to PHCs and DHs. The scales and subscales followed a general trend of having the lowest score for CHCs, slightly higher for DHs and highest for PHCs (Table 2).

Outcome indicators

Figure 1: Trend in the average OPD per day performance of the PHCs before and after the NQAS certification, 2015-20
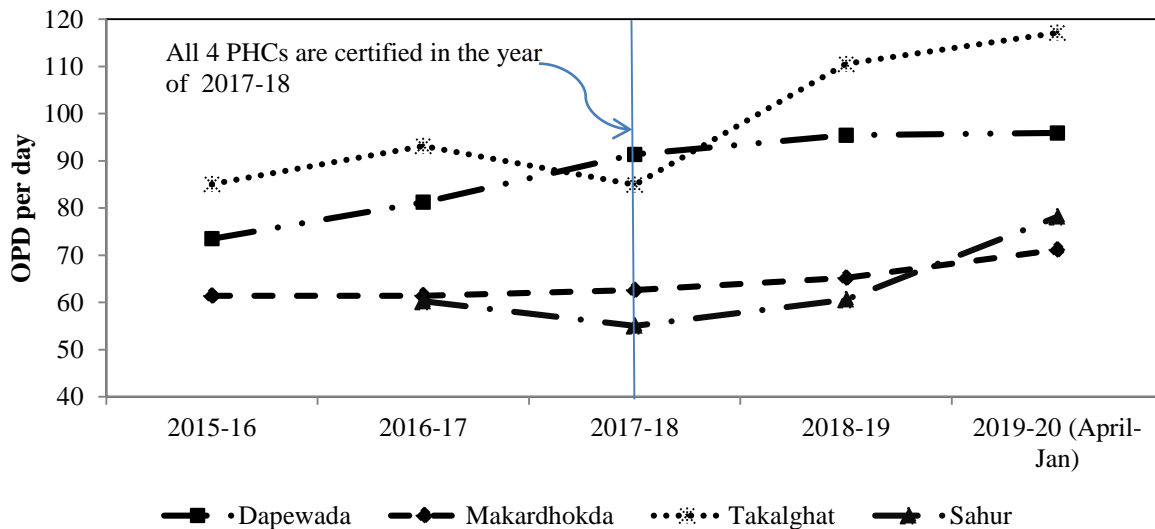

Note: Figure1 presents the average OPD per day in PHCs covered in the study. The average OPD per day is estimated as the total number of OPDs conducted in the year divided by the number of days in the year.

In the third strategy for understanding the effect of the NQAS accreditation, the analysis based on service delivery data was done and presented below. The data is presented for the two years before and two years after NQAS certification. In all the covered healthcare facilities, the NQAS assessment was done and NQAS certificates were issued during the 2017 and 2018.

The performance of the lower level healthcare facilities (i.e., PHCs) is presented in Figure 1 and 2 for OPD per day and proportion of night deliveries to total deliveries conducted in the facility.The results presented in these figures clearly show the positive impact of the NQAS

certification on the performance of the healthcare facilities. In all the PHCs covered the number of daily OPD have gradually increased year-by-year, indicating positive effect of NQAS accreditation (Figure 1). This increase in the number of OPDs per day was very evident in the Takalghat PHC of Nagpur District and Sahur PHC of Warda District.

Figure 2: Trend in the proportion of night deliveries conducted to the total deliveries at selected PHCs before and after NQAS certification, 2015-20
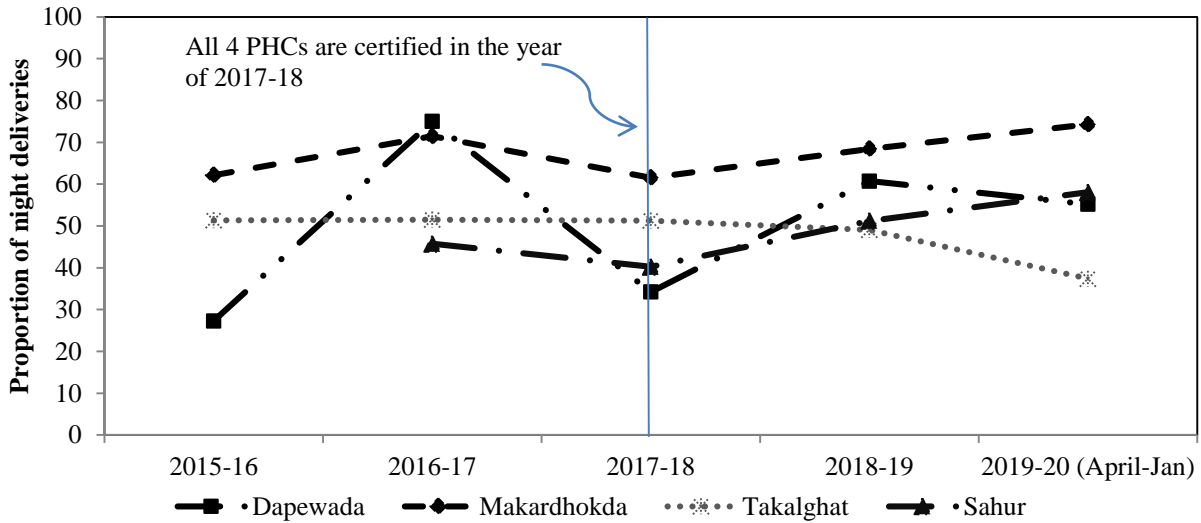
Note: The figure 2 presents the trend of proportion of night deliveries conducted at PHCs covered in the study. The proportion of night deliveries have been estimated using the number of deliveries conducted at night hours as a numerator and the total number of deliveries conducted in the healthcare facilities inthe year as the denominator multiplied by 100.

Similarly, the proportions of night deliveries to the total deliveries at the PHC level have also shown improving trends since the getting awarded with NQAS certificates. Figure 2 presents the distribution of night deliveries conducted in DHs and PHCs, respectively. Results clearly show that after successful certification of healthcare facilities by the NQAS certification, not only total deliveries, even number of deliveries conducted at night hours have also increased significantly. This is true for all the PHCs covered in the study except Takalghat PHC. Whereas, on the other hand, unlike PHCs, the improvements in the number of daily OPD and proportion of night hour deliveries to total deliveries in the healthcare facilities is not clearly depicted in the case of middle and higher level healthcare facilities, vis. CHCs and DHs, instead, even lowered the numbers in these higher level healthcare facilities. It should be noted here that the discussion with the staff regarding these unexpected trends revealed that due to developing peripheral healthcare facilities in terms of quality and availability of Doctors and other resources, the decrease in the number of OPD was observed in these DHs. In other words, more and more cases are being handled by the peripheral healthcare facilities.

Limitations

One important limitation among others was selecting only those hospitals that successfully passed through NQAS accreditation certificates. One might argue that results

generated from hospitals that underwent the NQAS certification process may not be generalized to hospitals that have not undergone accreditation at all.

Conclusion and recommendations

The result of the study, from statements/speeches generated through discussion by those interviewed, indicates several advantages of NQAS accreditation, such as public hospitals are competitively similar to private hospitals and, having a sense of pride and satisfaction among staff.This indicates that the NQAS accreditation has the potential to be consolidated as a system for quality management in the public healthcare hospitals. The purposes and clearly defined methods making it possible for government organizations to encourage the development of professional skills, time management, increased structure, efficient management of care and appreciation among workers.

Further, the result of scores generated through the self-administered interviews shows that the NQAS accreditation has a positive association with quality improvements in public hospitals.According to study participants NQAS accreditation is a good tool for improving the quality of healthcare. Moreover, study finding may be helpful for policy makers and hospital managers who are currently working to further strengthen the accreditation programme and its implementation. In order to make accreditation an effective regulatory instrument, there is a need to assess quality based on patient outcome indicators. This can be done by strengthening the current accreditation programme to be more outcomes oriented.

As the present study assesses the impact of NQAS certification through healthcare staff's perception and less concentration is given to outcome indicators, hence, it is noted and recommended here that there is a need to assessthe quality based on patient outcome indicators. We hope this study will promote discussion on management of public hospital quality, through an external evaluation, and also provide subsidies for the decision-making of managers and professionals working in public healthcare hospitals, which seek to be certified by NQAS accreditation.

Acknowledgement

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Appendix 1:The details list of the total number of healthcare facilities awarded NQAS certification by type of healthcare facilities in each State/Union Territories.

State	Number of facilities certified						Number of facilities certified with conditionality						Total
	DH	SDH	CHC	PHC	UPHC	Total	DH	SDH	CHC	PHC	UPHC	Total	
Andhra Pradesh	7	12	10	15	0	44	1	5	9	9	0	24	68
Chhattisgarh	3	0	1	0	0	4	1	0	1	0	0	2	6
D & N Haveli	1	0	0	0	0	1	0	0	0	0	0	0	1
Delhi	4	0	0	0	0	4	0	0	0	0	0	0	4
Gujarat	3	0	0	5	0	8	1	0	0	2	0	3	11
Haryana	6	2	2	45	5	60	0	0	0	6	0	6	66
Jammu & Kashmir	1	0	0	0	0	1	0	0	0	0	0	0	1
Jharkhand	0	0	0	0	0	0	1	0	0	0	0	1	1
Karnataka	8	0	0	0	1	9	0	0	0	0	0	0	9
Kerala	2	3	2	20	1	28	1	0	1	2	1	5	33
Madhya Pradesh	1	0	0	0	0	1	1	0	0	0	0	1	2
Maharashtra	1	1	0	38	0	40	0	0	0	8	0	8	48
Meghalaya	0	0	0	2	0	2	0	0	0	0	0	0	2
Mizoram	1	0	0	0	0	1	0	0	0	0	0	0	1
Odisha	1	0	2	0	0	3	0	0	0	0	0	0	3
Punjab	4	3	1	0	1	9	0	0	0	0	0	0	9
Rajasthan	2	0	2	3	1	8	2	0	0	0	0	2	10
Tamil Nadu	11	4	3	11	0	29	2	0	2	2	0	6	35
Telangana	0	1	0	37	0	38	0	1	0	5	0	6	44
Tripura	0	0	0	0	0	0	0	1	0	2	0	3	3
Uttar Pradesh	7	0	0	0	0	7	0	0	0	0	0	0	7
Uttarakhand	1	0	0	0	0	1	0	0	0	0	0	0	1
West Bengal	1	0	0	0	0	1	1	0	0	0	0	1	2
Total	**65**	**26**	**23**	**176**	**9**	**299**	**11**	**7**	**13**	**36**	**1**	**68**	**367**

Source: Prepared based on information received from MoHFW as on 30th August, 2019.

National Quality Assurance Standards (NQAS) Accreditation in Public Health Facilities: An Impact Assessment in Karnataka, Maharashtra and Chhattisgarh

Appendix 2: Description of five-point (1, strongly disagree; 5, strongly agree) Likert Scale items and questions .

Likert scale items	Questions
Quality results	Over the past few years, the hospital has shown steady, measurable improvements in the quality of **customer satisfaction**.
	Over the past few years, the hospital has shown steady, measurable improvements in the quality of services provided by the administration (finance, human resources, etc.)
	Over the past few years, the hospital has shown steady, measurable improvements in the quality of care provided to patients (e.g. medical, surgical, obstetric and pediatric patients).
	Over the past few years, the hospital has shown steady, measurable improvements in the quality of services provided by clinical support departments such as laboratory, pharmacy, and radiology.
	Over the past few years, the hospital has maintained a high quality health services despite financial constraints.
Leadership, commitment and support	Senior hospital executives provide highly visible leadership in maintaining an environment that supports quality improvement.
	The top management is a primary driving force behind quality improvement efforts.
	Senior hospital executives allocate available hospital resources (e.g. finances, people, time, and equipment) to improving quality.
	Senior hospital executives consistently participate in activities to improve the quality of care and services.
	Senior hospital executives have articulated a clear vision for improving the quality of care and services.
	Senior hospital executives have demonstrated an ability to manage the changes (e.g. organizational, technological) needed to improve the quality of care and services.
	Senior hospital executives have started to act on suggestions to improve the quality of care and services.
	Based on the accreditation results, senior hospital executives have a thorough understanding of how to improve the quality of care and services.
	Senior hospital executives generate confidence that efforts to improve quality will succeed.
Strategic quality planning	Staff/Nurses are given adequate time to plan for and test quality improvements.
	Each department and work group within this hospital maintains specific goals to improve quality.
	The hospital's quality improvement goals are known throughout your unit/facility.
	Staff/Nurses are involved in developing plans for improving quality.
	Middle managers (e.g. Nurse Heads, Director of Nursing or Clinical specialist) play a key role in setting priorities for quality improvement.
	Patients' expectations about quality play a key role in setting priorities for quality improvement.
	Staff/Nurses play a key role in setting priorities for quality improvement through representation in the hospital's organizational chart.
Education and training	Staff/Nurses are given education and training in how to identify and act on quality improvement opportunities based on recommendations from accreditation guideline.
	Staff/Nurses are given continuous education and training in methods that support quality improvement.
Reward and recognition	Staff/Nurses are rewarded and recognized (e.g. financially and/or otherwise) for improving quality.
	Inter-departmental cooperation to improve the quality of services is supported and encouraged.
	The hospital has an effective system for Staff/nurses to make suggestions to management on how to improve quality.
Quality management	The hospital regularly checks equipment and supplies to make sure they meet quality requirements.
	The hospital has effective policies to support improving the quality of care and services (example: Five Rights Principle in Drug Administration).
	The services that the hospital provides are thoroughly tested for quality before they are implemented.
	The hospital views quality assurance as a continuing search for ways to improve.
	The hospital encourages staff/nurses to keep records of quality problems through documentation.
Use of Data	The hospital does a good job of assessing current patient needs and expectations.
	The hospital does a good job of assessing future patient needs and expectations.
	Staff/Nurses promptly resolve patient complaints.
	Patients' complaints are studied to identify patterns and learn from them to prevent the same problems from recurring.
	The hospital uses data from patients to improve services.
	Data on patient satisfaction are widely communicated to hospital staff.
	The hospital uses data on patient expectations and/or satisfaction when designing new services.
Staff involvement in NQAS accreditation	During the preparation for the NQAS, important changes were implemented at the hospital.
	You participated in the implementation of these changes.
	You learned of the recommendations made to your hospital from NQAS (if it's the case).
	These recommendations were an opportunity to implement important changes at the hospital.
	You participated in the changes that resulted from accreditation recommendations.
Benefits of NQAS	Accreditation enables the improvement of patient care.
	Accreditation enables the motivation of staff and encourages team work and collaboration.
	Accreditation enables the development of values shared by all professionals at the hospital.
	Accreditation enables the hospital to better use its internal resources (e.g. finances, people, time, and equipment).
	Accreditation enables the hospital to better respond to its partners (other hospitals, diverse hospitals, private clinics, etc.)
	Accreditation contributes to the development of collaboration with partners in the health care system.
	Accreditation is a valuable tool for the hospital to implement changes.
	The hospital's participation in accreditation enables it to be more responsive when changes are to be implemented.