

# Obstetric Care Performance: A Situational Analysis of 24x7 Primary Health Centres from Gujarat, India

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## Abstract

Primary Health Centers are the cornerstone of rural healthcare in India. Updating these centers to provide round the clock services to reduce the unmet need for maternal healthcare; is an important objective of National Rural Health Mission since 2005. Yet, functionality of PHCs to provide 24x7 services remains poor due to several health system issues. The present cross-sectional facility based study evaluates the functioning of rural 24x7 primary health care facilities in 3 districts of Gujarat for obstetric care performance and its predictors. The study used pretested questionnaire for collecting data from all PHCs of study areas in 2012-13. Obstetric care performance was measured as number of deliveries conducted in last 3 months. Current study found that the obstetric care performance is independent of infrastructure or logistics situation but highly dependent availability on the skilled human resource. There is urgent need for a systematic study to evaluate performance of public health facilities along with use of routinely collected data to make the system efficient.

**Index terms**— obstetric care performance, primary health centres, 24x7 PHCs.

## 1 Introduction

India contributes one-fifth of the global burden of direct maternal deaths. National government has made efforts since independence in 1947 to improve health infrastructure and access to primary care including delivery care.

However India continues to face challenges in improving key maternal health indicators such as adequate antenatal care coverage, institutional deliveries [1]. Low Utilization of health care services is an important issue in India with majority of mothers not receiving adequate antenatal care and an unacceptable proportion of home deliveries [2]. Despite having tiered healthcare system to improve access for the basic healthcare needs including obstetric care at the community level, significant proportion of population in rural areas do not have round the clock access [3]. Primary Health Centres (PHCs) comprise the second tier in rural healthcare structure envisaged to provide integrated curative and preventive healthcare. A medical officer, who is a basic medical graduate, is in charge of the PHC supported by fourteen paramedical and ancillary staff. It acts as a referral unit for six sub-centers that are based at the village level. It has four to six beds for inpatients. The activities of PHC involve curative, preventive, and family welfare services in accordance with the Indian Public Health Standards (IPHS) [4]. Currently, India has 24,049 PHCs as per population based norms of one PHC per 30,000 populations [5]. Under the National Rural Health Mission, launched in the year 2005, fundamental changes were made in the health care delivery system with a view to make it accountable, accessible and affordable system of quality maternal health care [6].

Gujarat, a western state in India is one of the better performing states with more than 75% institutional deliveries [7] and maternal mortality ratio of 122 [8]. Although it is not one of the NRHM high focus states but it does include many remote/geographically difficult and poorly served areas [8]. The state has taken steps to strengthen its PHC services by upgrading about 100 PHCs to provide round-the-clock obstetric services (24X7), unfortunately only half of them remain functional in the year of 2013-14 [9]. Even the functional PHCs have poor obstetric performance as the proportions of deliveries conducted in PHCs are very low at 3% [10]. Failure to deliver obstetric care at the grass root level despite significant improvements in infrastructure and numerous financial assistance programs deserve urgent attention.

To explore the issue, recently the Planning Commission of India carried out a study to evaluate the functionality of 24x7 health care facilities in high focus states and found that health system issues such as infrastructure and logistics that adversely affected the performance of these facilities [11]. In our knowledge, no such study has been conducted in better performing states such as Gujarat. The objective of current study is to make a comprehensive evaluation of the functioning of rural 24x7 health care facilities regarding obstetric care performance and to understand its predictors.

## II.

### 3 Methodology

Current study included all functional 24x7 PHCs (32 facilities) located in the rural areas of 3 study districts (Surendranagar, Sabarkantha, Dahod) of Gujarat. The facility-based cross-sectional study conducted between May 2012 and April 2013. A semistructured and pre-tested study questionnaire translated in vernacular language (Gujarati) was used by trained nurses. Some data from records of the facilities was captured by the data collectors with help of pretested tool. Obstetric performance is defined as number of deliveries conducted in last 3 months which is collected by data collector and verified with facility records.

Data were summarized using the descriptive statistics and linear regression was done for obstetric care performance as a dependent variable for predictors such as facility infrastructure, equipment and skilled human resources for delivery care. Pearson's Correlation test was performed to know the level of prediction for significant predictors. The data analysis carried out using R version 3.0.1 software.

## III.

### 5 Results

The study results show more than half PHCs are located within village boundary. Basic amenities such as chamber is available in only 22% of the facilities surveyed while sterile gloves for delivery are available in 69% of the PHCs. On an average 4 plus beds are available for about 41 deliveries performed over 3 months. These results show adequate infrastructure for delivery care in majority of the PHCs surveyed irrespective of obstetric performance.

Results of the current study show the number of healthcare providers and years of experience are higher among PHCs with better obstetric performance. Difference in number of medical officers and years of experience of staff nurse are significant predictors of obstetric performance. Pearson's correlation coefficient indicates that about 48% of variance in the obstetric performance of study facilities is explained by differences in experience of staff nurses ( $r=0.48$ ). These findings highlight the importance of having adequate numbers of well experienced human resources to improve the obstetric performance of a health facility.

## 6 Discussion

Under the NRHM, the federal/national government is providing major financial support to states to strengthen their health systems with emphasis on new constructions and up gradation of PHCs [12]. Historically, national/state governments of India as well as developmental agencies such as World Bank have concentrated on infrastructure development to improve healthcare service delivery while generally disregarding the development of skilled human resources for health [13, 14]. Previous research and government data suggests that infrastructure in public health facilities has significantly improved in last decade [15,16]. Current study found that almost all of the surveyed PHCs have basic amenities required for providing obstetric care, which may be the reason that infrastructure did not have major bearings on obstetric performance of facilities.

In current study, a significant proportion of variance in the obstetric performance of surveyed PHCs was seen in the years of experience of staff nurses. Also, the regression analysis showed that the number of medical officers and years of experience of staff nurses are significant predictors of obstetric performance at the PHC level. Lack of qualified human resources for health care (HRH) is a major limiting factor in implementing health policies and health reforms in the developing world [17]. One of the major HRH challenges is the availability of qualified/skilled staff. Current study findings highlight the importance of ensuring availability of skilled and experienced healthcare providers to make facilities functional for obstetric care.

In India, public health is a state subject hence states decide strategies to improve health of the local population even if funding is from national government. In 2012, about 33% of PHCs in Gujarat did not have any medical officers, the situation is worse than 2008 when only 5% of PHCs were without a doctor [18]. It should also be noted that majority of PHCs in Gujarat have only one medical officer and proportion of female medical officers is even lower. It is difficult to provide round the clock obstetric care with only one healthcare provider. Development of human resource for health in the state is limited to establishing new medical colleges and training of medical graduates to provide emergency obstetric care while ignoring training of skilled birth attendants such as staff nurses and midwives [19].

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## 7 Recommendations

Gujarat needs to improve human resources management to increase the proportion of deliveries taking place in PHCs and provide basic maternal health care at the community level. There is a need for evidence based human resource policy and its implementation at the grass root level to improve current situation. Gujarat needs to employ innovative strategies to ensure posting of adequate numbers of skilled and experienced health care providers who could be a medical graduate or trained midwives to all the PHCs to ensure round the clock obstetric services. Tamil Nadu has posted 3 staff nurses to provide 24X7 delivery care in PHCs and the intervention has improved provision of obstetric services at the community level [20] . Such innovations can be replicated to implement low cost evidence based strategies and increase obstetric performance of PHCs.

## 8 VI.

## 9 Conclusions

Current study emphasizes the issue of human resources for health and its impact on the functionality of health facilities to provide round the clock obstetric care. As a result of past and present national and state level programs, infrastructure of majority of primary health centers has improved significantly and is adequate to provide basic delivery care. Yet, proportion of deliveries taking place in these grass root level facilities is dismally low. Gujarat needs to improve its human resources management for obstetric care and ensure posting of adequate numbers of skilled providers for effective tiering of delivery care.

VII.



Figure 1: Figure 1 :

1

Year 2014				
22				
Volume XIV	Basic Amenities	Separate Delivery Room	Available (%)	100
Issue V Ver-				
sion I				
( D D D D )	Power Backup for delivery room	Water Supply to delivery room	63	59
Medical Re-	Drinking Water Provision	Adequate Lighting of De-	84	69
search	livery Room Toilet Privacy	Available for Women in	able (%)	69
	Labor Equipment Sterile	Gloves for Delivery Epi-	50	72
	siotomy Scissors Baby Care Unit			
Global Jour-	Performance Statistics	Total delivery performed in	Median (Min-	
nal of	last 3 months Total No. of Beds	No. of Doctors No.	Max) 41 (1-	
	of Nurses Experience of Doctors (in yrs.)	Experience	252) 4 (1-7) 1	
	of Nurses (in yrs.)		(0-2) 3 (1-7) 9	
			(1-33) 7 (1-30)	
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[Note: E]

Figure 2: Table 1 :

2

Variables	Estimate	Std. Er-	p-value
		ror	
Power Backup for delivery room	16.35	23.31	0.488
Water Supply to delivery room	-65.70	19.81	0.002**
Adequate Lighting of Delivery Room	-89.86	18.25	0.000***
Toilet Privacy Available for Women in Labor	-12.26	38.96	0.755
Baby Care Unit	-47.44	21.04	0.031*
Sterilizer/ Boiler	-43.67	21.50	0.091
No. of Medical officers	50.91	18.69	0.011*
No. of Nurses	10.76	8.43	0.211
Experience of Medical Officers	0.03	1.33	0.978
Experience of Nurses	4.05	1.42	0.007**
? p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001			
IV.			

Figure 3: Table 2 :

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## .2 VIII.

## .3 Conflicts of Interest

The authors declare that they have no competing interests.

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[ Coverage Evaluation Survey Report (2009)] , [http://www.unicef.org/india/Gujarat\\_Factsheet.pdf](http://www.unicef.org/india/Gujarat_Factsheet.pdf) Accessed on 28th Coverage Evaluation Survey Report 2009. May 2014. UNICEF-Gujarat Fact Sheet

[ New Medical Colleges in Gujarat. Opinion by Health Minister Report (2011)] , *New Medical Colleges in Gujarat. Opinion by Health Minister Report* October 2011. January 2013. (Times of India)

[An evaluation of functioning of 24x7 health facilities in selected states of India International Institute of Population Sciences (IIPS) 'An evaluation of functioning of 24x7 health facilities in selected states of India'. <http://www.rchiips.org/pdf/rch3/state/Gujarat.pdf> 11 *International Institute of Population Sciences (IIPS). District Level Household and Facility Survey*, 2010. Government of India. 3 p. . (Mumbai: IIPS)

[Development in East Asia -Towards Balanced Regional Development and Integration ()] *Development in East Asia -Towards Balanced Regional Development and Integration*, 2007-2. Chiba: IDE-JETRO. p. . (ERIA Research Project Report)

[Guidelines by Directorate General of Health Services, Ministry of Health Family Welfare Government of India Indian Public Health Standards (IPHS), 2012. 'Guidelines by Directorate General of Health Services, Ministry of Health & Family Welfare Government of India'. *Indian Public Health Standards (IPHS)*, 2012.

[Srinivisan] *Health Care in India -VISION 2020. Issues and Prospects, Planning Commission of India*, R Srinivisan .

[Dussault and Dubois ()] 'Human resources for health policies: a critical component health policies'. Gilles Dussault , Carl-Ardy Dubois . *Human Resources for Health* 2003. 1 p. 1.

[Rao ()] 'Human Resources for Universal Health Coverage'. D T Rao . [http://uhc-india.org/uploads/ThammaRaoD\\_HumanResourcesforUniversalHealthCoverage.pdf](http://uhc-india.org/uploads/ThammaRaoD_HumanResourcesforUniversalHealthCoverage.pdf) Edited by Chapter, 2011. Public Health Foundation of India Press. 4 p. .

[Gupta (2013)] *India Needs Improved Healthcare Infrastructure. eHealth; Elets News Network (ENN) in Magazine*, Ravi Gupta . <http://ehealth.eletsonline.com/2013/09/india-needs-improved-healthcare-infrastructure> September 2013.

[Bajpai and Sachs (2011)] 'India's Decade of Development Looking Back at the Last 10 Years and Looking Forward to the Next 20'. Nirupam Bajpai , Jeffrey D Sachs . *CGC / SA Working Paper* July 2011. (3) .

[De (ed.)] *International Infrastructure a) Authors Contribution Conceived and designed the study: SY KV DM, P De . Kumar, N. (ed.) (Infrastructure Development in India. Performed the experiments: SY KV. Analyzed the data: SY KV. Wrote the paper: SY KV DM)*

[Ministry of Health Family Welfare, Government of India] *Ministry of Health & Family Welfare, Government of India*, [http://nrhm.gov.in/nrhm-in-state/state-wise-information/gujarat.html#health\\_profile](http://nrhm.gov.in/nrhm-in-state/state-wise-information/gujarat.html#health_profile) Gujarat State Health Profile. National Health Mission

[National Rural Health Mission. National Rural Health Mission Document ()] *National Rural Health Mission. National Rural Health Mission Document*, <http://mohfw.nic.in/WriteReadData/l892s/492794502RHS%202012.pdf> 2005-2012. 2005. (New Delhi: Ministry of Health and Family Welfare: Government of India)

[New Delhi: Office of Registrar General: Government of India ()] *New Delhi: Office of Registrar General: Government of India*, [http://censusindia.gov.in/vital\\_statistics/SRS\\_Bulletins/SRS\\_Bulletin-September\\_2013.pdf](http://censusindia.gov.in/vital_statistics/SRS_Bulletins/SRS_Bulletin-September_2013.pdf) 2013. 48. (Draft Report)

[Huntington ()] 'Obstetric Care Performance: A situational analysis of 24x7 Primary Health Centres from Gujarat'. Dale Huntington . *Bulletin of the World Health Organization* 2012. 2014. 90 (5) p. . (India. Global Journal of Medical Research)

[References Références Referencias] *References Références Referencias*,

[Status of Primary health infrastructure in Gujarat Service provider. Department of Health and Family Welfare, Government of India] *Status of Primary health infrastructure in Gujarat Service provider. Department of Health and Family Welfare, Government of Gujarat*, p. .

## 9 CONCLUSIONS

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- 173 [Paruzzolo et al. ()] *Targeting poverty and gender inequality: To improve maternal Health.*  
174 *Women Deliver: International Centre for Research on Women*, S Paruzzolo , R  
175 Mehra , A Kes , C Ashbaugh . [http://www.icrw.org/files/publications/](http://www.icrw.org/files/publications/Targeting-Poverty-Gender-Inequality-Improve-Maternal-Health_0.pdf)  
176 [Targeting-Poverty-Gender-Inequality-Improve-Maternal-Health\\_0.pdf](http://www.icrw.org/files/publications/Targeting-Poverty-Gender-Inequality-Improve-Maternal-Health_0.pdf) 2010.
- 177 [The World Bank estimates. WHO Library Cataloguing-in-Publication Data ()] *The World Bank estimates.*  
178 *WHO Library Cataloguing-in-Publication Data*, 2012.
- 179 [Trends in maternal mortality ()] *Trends in maternal mortality*, [http://planningcommission.nic.in/](http://planningcommission.nic.in/reports/sereport/ser/ser_health0602.pdf)  
180 [reports/sereport/ser/ser\\_health0602.pdf](http://planningcommission.nic.in/reports/sereport/ser/ser_health0602.pdf) 1990 to 2010. (World Health Organization)