Extended Abstract

Quality of Maternal Health Care and Its Impact on Utilization of Services in India: An Assessment

Introduction

India has made considerable progress in social and economic development in recent decades, as improvements in indicators such as life expectancy, infant mortality, and literacy demonstrate. However, improvements in women's health, particularly in the north, have lagged behind gains in other areas. India is one of the few countries where males significantly outnumber females, and its maternal mortality rates in rural areas are among the world's highest. Females experience more episodes of illness than males and are less likely to receive medical treatment before the illness is well advanced. Women, especially poor women, are often trapped in a cycle of ill health due to childbearing and hard physical labor. In developing world, most important causes of maternal mortality are abortion, toxaemia, bleeding, infection and anaemia (Jejeebhoy, 1997). Although many times complications are not predictable and are random in nature, most of the maternal deaths are preventable. Availability of good obstetric care can reduce a large proportion of these preventable deaths. Good antenatal care and emergency obstetric care are the fundamentals for decreasing maternal mortality. Further, a good quality of family planning services may also be helpful for reducing the deaths occurring during pregnancy and child birth. Family planning services lower the life time risk per woman by reducing the number of pregnancies (especially for those who carry a high risk pregnancy). Further, these services may reduce the unwanted pregnancy which many times result into unsafe abortions and hence into maternal mortality/morbidity.

Surprisingly, in India, in spite of a number of efforts made to improve maternal health, still the target has not been achieved what has been aimed by the government of India. It has been targeted to reduce maternal mortality ratio to 200 by 2000 but still it has not been achieved. It has been predicted that some 407 women perish every year in child birth per 100,000 live births in India (Source: SRS, 2001). The recent DLHS-II report shows that still only 48 percent of the total deliveries are the safe delivery. Coming to the contraceptive use, it shows that completed fertility at national level is 4 which is quite high than what government has aimed to achieve. Though the southern states have performed well but EAG and northeastern states are still having high fertility. In most of the high fertility states there exists a high level of unmet need for family planning. Total unmet need has been estimated as 21.1 percent by DLHS-II. The unmet need is high for the spacing as well as for limiting methods. For most of the couples, contraception has come to mean sterilization and spacing as a concept is yet to take root. All these facts indicate towards the existing gaps between the blue-prints of policies and grass root level interventions.

To ensure the availability of basic health care services to the women/couple of underserved sections (usually rural and poor), Government of India is providing reproductive health care services free of cost (or at lower cost). But, while providing the services free of cost (or at lower cost), the quality may get deteriorated. Some times the quality becomes so poor that the *"free of cost"* label also fails to motivate the common people to make use of the available services with satisfaction. Quality of care delivered by health care institutions is a matter of public concern. Any difference in quality of services by ownership of health care institutions has significant policy implications. Evidence from health-seeking behavior studies suggests that people, who can afford, tend to use private health care institutions. It is assumed that the private health care institutions must be providing better quality of

services. Otherwise, why would the rich and middle class access the private health care sector? Such an argument relies on the observed pattern of utilization as a proxy measure of quality of care.

Structure of Primary Health Care Infrastructure in India

In India, based on population norms, the primary health care infrastructure has been developed as three tier system- Sub-Center, Primary Health Center and Community Health Center. Sub-Centers (SC) provide the first level contact between providers and the consumers. Primary Health Centers (PHC) play a very crucial role in delivery of basic health care services. They are the vehicles of implementing the national health programmes (like Disease Control Programme). But, mainly they are the pillar stone of the maternity and child health programme, now integrated in RCH programme. PHC's are supposed to provide a wide range of preventive and curative services. The complicated cases, if any, are referred to bigger institutions like Community Health Centers or District Hospitals.

Need for the Study

To get a single value of quality of care provided at different districts, we need to construct a composite index. Though there are several methods of doing it, yet one needs to discuss which one of them may provide better results. Many times people make composite indices in the way they like. The simplest way to construct a composite index is to use equal weights for all the dimensions of quality of care. Another way is to use sophisticated statistical analysis to generate weights for different dimensions according to their importance. Now the question is "*whether using complicated statistical analysis really makes any significant impact on the assessment of quality of care?"* We try to find answer of this question through the first objective.

In a country like India, where most of the maternal deaths occur due to lack of basic health care services, quality of better care at lower level (that is at sub center and at PHC) may be helpful in preventing a significant proportion of maternal deaths. Unfortunately, quality of these basic services are usually neglected. So due to less number of efforts made to measure the quality of maternal care and family planning services at PHC or below level, it becomes important to carry out a scientific study. Further, it will be interesting to examine the quality of maternal health care in the selected districts of India by taking family planning services as an integral component of it. Assessment of quality of maternal health care always has its own importance for policy making and to identify the bottlenecks in the providing system. The facility survey (Phase II, 2003) and RCH-RHS (2^{nd} round) provide useful information on these aspects. Surprisingly, so far not much of these information have been utilized by the researchers which gives an opportunity to assess the quality of health care services. As it is the recent data available on these aspects, it is natural to go for assessment for the quality of maternal health care.

As some of the available literatures have shown that antenatal care (ANC) may not have any significant impact on maternal mortality and morbidity. On the other hand there are studies which conclude that the ineffectiveness of ANC on maternal mortality and morbidity is mainly due to inappropriate way of measurement. So, it will be useful to examine the effectiveness of ANC on maternal health by adopting an appropriate way of measuring it. As it is the point of entrance, so the individual's behaviour is supposed to be dependent on their experience of initial contacts. Since most of the studies done so far to examine the importance of ANC on utilization of other maternal health care services, have focused their attention mainly towards the number of ANC made and hence it will be useful to use the available data to examine whether the ANC **"*with proper timing and proper treatments*"** has any impact on utilization of other services. Though we do not have much information regarding *timing of the services* (except the month of the first ANC visit), yet with the available information and by appropriate weights for different care contents of ANC one may examine the

impact of ANC on utilization of other maternal health care services. Further, utilization may be viewed as a function of a number of factors operating at various levels, so it will be useful to examine the impact of various factors on utilization of services. This result will have significant policy implications.

Objectives

(1) To discuss the construction of composite index for-

(a) Provision of Maternal Health Care.

(b) Services delivered.

(2) To rank the selected districts according to the quality of care being provided by them.

(3) To carry out a multilevel analysis to measure the influence of various factors at different levels on utilization of various maternal health care services.

Data Sources

(1) Facility Survey (Phase II, 2003)

(2) RCH-RHS (2nd Round, 2002-2004).

Methods and Materials

We define a term "Women in contact" as-

*"Women who went to PHC or SC for ANC **or** contacted by any health worker for ANC.".*

Provision of Care: It consists of-

(A) Physical infrastructure
Percent of Primary Health Centers (PHC's) having-

(1) At least six beds	**(5)** Laboratory with Laboratory Technician
(2) Telephone	**(6)** Water
(3) Labour/IUD room.	**(7)** Electricity
(4) Functional Vehicle.	**(8)** Operation Theater

(B) Availability of Staff
Percent of PHC's having-

(1) At least one MO
(2) MO staying in PHC compound
(3) At least one Female Health Worker
(4) At least one Male health worker

(C) Technical Competency of medical personal
Percent of PHC's having at least one Medical Officers trained in

(1) Medical Termination of Pregnancy **(2)** Sterilization (Tubectomy or No Scalpel Vasectomy)

(D) Technical Competency of paramedical staff

Percent of PHC's having at least one paramedical staff trained in

(1) Blood Pressure Checking	**(2)** IUD insertion

(E) Stock of selected items (Vaccine/ Equipments)

Percent of PHC's having-

(1) MTP Suction Aspirator	**(4)** Essential obstetric care drug kit
(2) IUD insertion kit (Kit G)	**(5)** IFA tablets (Large or Small)
(3) Normal Delivery Kit (Kit I)	**(5)** Contraceptives (IUD, Condoms and Oral Pills)

Quality of Services delivered

It consists of quality of care for ANC, Postnatal Care, and Family Planning Services. Following are the components which will be used to assess the quality of services provided to the people.

(1) Information given to clients
(2) Services delivered
(3) Mechanism to follow up

Measurement of various components

(1) Information given to Clients

This has been measured by-

- **(i)** Proportion of women who have gone to PHC ***or*** SC ***or*** have been contacted by any health worker for ANC, have been **(1)** Informed about *diet, danger sign and Delivery care during the pregnancy*. **(2)** Suggested to go to health facility for delivery.
- **(ii)** Proportion of people who have been sterilized at PHC/SC **or** who are using any spacing method (IUD/Oral Pills/Condoms) **and** getting these from Primary Health Centers/Sub Centers/Auxiliary Nurse Midwife /Government Nurse, have been informed about information about possible health problems of the methods which they are using.
- **(iii)** Proportion of women who/whose husband have been sterilized at PHC/SC have been informed about other methods available.

(2) Services Delivered

This has been measured by the Proportion of ***women in contact*** have gone through measurement of Height, Weight, Blood pressure, Blood test and Urine test at least once during the current/last pregnancy, prescribed IFA tablets, given at least one TT injection.

(4) Mechanism of Follow up

Proportion of women in contact, who have got at least two ANC will measure the extent to follow up for ANC. Similarly proportion of women in contact who have got at least one visit after delivery will measure the extent of follow up for post natal care. In case of family planning services, follow up has been measured by proportion of couples who have been sterilized at PHC/SC **or** who are using any spacing method currently (IUD/Oral Pills/Condoms) **and** getting these from

PHC/SC/ANM/Government Nurse, have been visited by any health worker after starting any contraceptive method.

Tools for Analysis

(1) For First and Second Objective

For calculating index for "Provision of Care" provided at the PHC or below level, we have to provide certain weights for the various dimensions considered above. For computation of Index for *Physical infrastructure* we have used equal weights for the various proportions computed for 316 districts. The reason behind this is that use of factor analysis (and the method suggested by Iyengar and Sudarshan (1982), does not make any significant difference on the ranking of the districts. Even the absolute values of the indices for same district obtained with the help of different weighting procedures were not too much different. The districts were ranked according to the indices using equal weights as well as using weights obtained from factor analysis. *Wilcoxon Matched-Pairs Sign Ranked Test* (or simply Wilcoxon test) has been applied to test the significance in the differences in ranks of various districts. The test has shown that there has not been any significant difference in ranking of districts by using the two different set of weights (not significant event at 10 percent level of significance). The possible reasons for this is that the standard deviations of the variables under study are not very much different from each other hence we could not get very different weights for different dimensions to have a significant difference in the ranks of the districts. Moreover, the correlation coefficient (Pearson as well as Spearman) between proportion of safe deliveries and index of physical infrastructure obtained with the two different sets of weights were found to be high and significant. The difference between the correlation coefficient of safe deliveries with the two set of indices has come out too small to perform any test for examining the significance of the differentials in the correlation coefficient.

For getting a single value for availability of staff, we have given unequal weights to the different staff according to their relative importance. At least one MO, MO staying in PHC compound, at least one Female Health Worker and at least one Male health worker were assigned weights equal to *2, 2, 1* and *1* respectively. As our objective is to do the relative ranking of the districts so we feel that even after involvement of subjectivity in assigning weights, there will not be any significant difference in the ranking of the districts if weights are changed. For rest of the dimensions considered in provision of care, equal weights have been used as it is hard to say which variable is more important that the others among themselves. Coming to the component "Information given to clients" we have given weight equal to 1 for those women who have been given information about all three aspects namely- *diet, danger sign and Delivery care during the pregnancy.* Proportion of women having information on at least two aspects will be given weight 2/3 and those having information on any one aspect will be given weight 1/3. For rest of the components under the domain of "Information given to clients", we have used equal weights. For computing a single value for "Services Delivered" we have used weights for those care contents as it is given below for computation of *level of ANC*. These weights are based on the information form the available literature and have been used in a recent study made by Ram and Singh (2006).

By giving equal weights for the indices of various dimensions of quality of care, we have got a single value for it. According to this single index the 316 districts have been ranked.

(1) For Third Objective

This has been fulfilled by carrying out a multilevel logistic regression. Variables have been considered at three levels in the analysis, namely - *variables at individual level*, *variables at village level* and *variables at District levels*. The dependent variables under consideration are-

(1) Safe Delivery

(2) Advice sought for pregnancy complications
(3) Advice sought for post- delivery complications.

Explanatory Variables

Individual Level	Village Level	District Level
Education	Presence of health care provider in the village	Quality of care at district level
Caste	Availability of health facility in the village	Percent of SC/ST Population
Religion	Distance from the transportation facility €	
SLI*	Connected by all whether roads	
Experience of any previous births		
Experience of any pregnancy complications		
Level of ANC ☼		

☼ It is defined at the below.
€ It will be categorical variable [(1) less than or equal to two km (2) more than two km]
*It will be computed by considering following aspects with their weights-

Component	Category	Weights
Source of drinking water	**Tap (own)** **Tap (Shared)** **Hand pump and well** **Others**	**3** **2** **1** **0**
Type of house	*Pucca* *Semi pucca* *Kaccha*	*4* *2* *0*
Source of lighting	**Electricity** **Kerosene** **Other**	**2** **1** **0**
Fuel for cooking	*LPG* *Kerosene* *Others*	*2* *1* *0*
Toilet Facility	**Own flush toilet** **Own pit toilet** **Shared toilet** **No toilet**	**4** **2** **2** **0**

Ownership of items	*Fan*	*2*
	Radio/Transistor	*2*
	Sewing machine	*2*
	Television	*3*
	Telephone	*3*
	Car	*4*
	Tractor	*4*
	Motorcycle/Scooter	*3*
	Bicycle	*2*

Standard of Living index (SLI) has been categorized into three categories namely low, medium and high.

☼**Does ANC really make a difference for utilization of Maternal Health Services?**

For this, first we will compute the ***level of ANC*** for the selected districts in India. The care contents of ANC and their weights will be taken as

Various Contents of ANC	**Weights**
(1) At least three ANC.	3
(2) First visit made in first four months of pregnancy.	3
(3) Prescription of IFA tablets.	3
(4) At least one TT injections.	2
(5) Advice regarding for the danger sign of the pregnancy.	2
(6) Advice regarding delivery care.	2
(7) Blood pressure measured.	2
(8) Abdomen examined.	2
(9) Advice regarding diet.	1
(10) Blood test performed	1
(11) Internal examined.	1

Level of ANC is a categorical variable having three categories namely- *No ANC*, *Moderate level of ANC and High level of ANC.*

Major Findings

(1) Level of antenatal care and quality of care has been found to be significantly associated with the utilization of maternal health care services. It has been found that even after controlling the various socio-economic and demographic factors level of ANC may lead to utilization of other maternal health care services.

(2) Women who are going to private sector for antenatal care are more likely to go for safe delivery than those women who have gone for public sector for ANC. (after controlling various socio-economic and demographic factors).

Note: Safe delivery means either institutional delivery or delivery assisted by skilled person.