Janani Suraksha Yojana and the Maternal Mortality Ratio

ANRUDH K JAIN

Surveys indicate that the Janani Suraksha Yojana, which offers cash assistance to pregnant women opting for institutional deliveries, has increased the number of such births in hospitals. Can this increase be used as an indicator of a decrease in the maternal mortality ratio? It is likely that the cash incentive may disproportionately attract pregnant women without complications to institutions, while the increased workload leads to women with complications not getting proper treatment. To evaluate the programme adequately, studies in states with a high maternal mortality ratio based on a representative sample of institutions with and without emergency obstetric services are needed.

The maternal mortality ratio (MMR) in India is estimated to have declined from about 398 to 301 maternal deaths per 1,00,000 live births between 1997-98 and 2001-03 and to 254 between 2004 and 2006. State-level data also indicate that the MMR decreases with an increase in the per cent of institutional deliveries. For example, the MMR in Kerala with 97% institutional deliveries was estimated to be 110 maternal deaths per 1,00,000 births in comparison with 517 in Uttar Pradesh with about 10% institutional deliveries in 2001-03.

Recognising that an increase in the level of institutional deliveries leads to a reduction in the MMR, the Ministry of Health and Family Welfare launched an ambitious cash assistance programme – the Janani Suraksha Yojana (JSY) – in April 2005 to encourage institutional deliveries by providing cash incentives to pregnant women and to Accredited Social Health Activists (ASHAs) and thus to reduce the MMR, especially among states with high maternal mortality. It is estimated that about 21 million women have benefited from this scheme between April 2005 and August 2009. Over Rs 10 billion has been spent between 2005-06 and 2007-08, and an additional Rs 10.7 billion has been allocated for 2008-09.

Problem Statement

Various population-based surveys indicate that the JSY has made a difference in terms of increasing institutional deliveries. Can this increase in institutional deliveries be used as an appropriate indicator for a decrease in the MMR? The answer would depend on whether the assumptions underlying the negative relationship between the two remains valid in the presence of cash incentives.

The population-based studies have raised many issues in the implementation of JSY. These include shortage of beds in facilities, the quality of care received by pregnant women, limited access to facilities among the most economically vulnerable groups, lack of knowledge about the JSY among the potential beneficiaries, and complaints by beneficiaries about delays and enormous requirements for receiving payments and not receiving the full compensation amounts. These implementation problems suggest that the provision of cash incentives under the JSY may be violating the basic assumptions underlying the negative relationship between the level of institutional deliveries and the level of MMR. While the implementation of the JSY will increase the level of institutional deliveries, it may not decrease the MMR to the same extent.

It is true that the population-based surveys will continue to document an increase in the level of institutional deliveries and provide other important information on various facets of the implementation of the scheme, but they are not sufficient to assess the impact of the JSY on the reduction in the MMR because these surveys collect information from those mothers who survive childbirth. Moreover, while the MMR in India is unacceptably high, it is still a rare event and one would need an enormously large population-based survey to estimate changes in the MMR.

Proposed Solution

Accurate time series data on two additional indicators: (1) the proportion of pregnant women with complications among institutional deliveries and (2) case-fatality ratio among them are needed to triangulate the potential impact of JSY on the reduction of the MMR and to validate the assumptions underlying the relationship between the level of institutional deliveries and the level of MMR. This information can be generated by initiating facility-based studies in selected states with high maternal mortality. The need for facility-based studies (in states with high maternal mortality ratio based on a representative sample of institutions with and without emergency obstetric services) is also indicated by the fact that while the MMR in Kerala with below replacement level fertility and almost universal institutional deliveries is the lowest among the states, it is still about 14 times higher than that in the UK.

Anrudh Jain (ajain@popcouncil.org) is with the Population Council, New York, US.
A shift from home to institutional deliveries, in the absence of an incentive system, is expected to reduce the level of the MMR because of the following assumptions:

(i) Pregnant women with complications are more likely to seek care and reach facilities with emergency obstetric care (EOC) than those without complications.
(ii) The MMR among institutional deliveries is usually lower than that among home deliveries because institutions are better able to deal with pregnancy complications.
(iii) The MMR among institutional deliveries is likely to decrease with gradual improvements in the availability and quality of EOC at these facilities.

The overall MMR in a state is the weighted average of the ratio among institutional deliveries and that among home deliveries – weights being the per cent of deliveries in these two groups. In fact, institutions can be further divided in two groups – with or without adequate EOC, and home deliveries can also be divided in two groups – attended by trained or untrained personnel. Deliveries in each of these four groups can be further subdivided in two groups – with or without such complications as excessive bleeding, convulsion, high blood pressure, and premature or prolonged or obstructed labour. The overall MMR is the weighted average of the MMRs in each of these eight groups – weights being the per cent of deliveries in each group. A reduction in the overall MMR will depend upon changes in these weights and these MMRs. A reduction in MMR will also depend upon changes in other factors such as use of contraception and maternal deaths associated with unsafe abortions.

The MMR among pregnant women with life-threatening complications is likely to be highest if they are delivered in facilities with adequate EOC. Thus, the MMR is likely to decrease as more and more pregnant women with potential life-threatening complications are able to reach facilities with adequate EOC in time and are successfully treated at these facilities. Under this scenario, an increase in institutional deliveries will be accompanied by a shift in their composition towards a higher proportion of deliveries with complications and a decrease in the case-fatality ratios among these deliveries.

On the other hand, the MMR among deliveries without complications is likely to be close to zero irrespective of the place of delivery or who attended it. This means that while a shift in the place of delivery from home to institutions for pregnant women without complications will increase the per cent of institutional deliveries, it is unlikely to have any significant effect on the overall MMR. Under this scenario, an increase in institutional deliveries is unlikely to reduce MMR.

The second scenario is the more likely outcome in the presence of financial incentives to promote institutional deliveries because the incentive system under JSY may disproportionately attract pregnant women without complications to institutions, i.e., those in need of these services may not even get to facilities with adequate EOC. Moreover, once pregnant women with complications get to these facilities they may not get treated successfully because of the increased workload. Hence an increase in institutional deliveries resulting from JSY may not translate into a reduction in the MMR.

The extent to which the assumptions underlying the negative relationship between the level of institutional deliveries and the MMR, mentioned above, remain valid with the financial incentives provided to beneficiaries as well as to community workers under the JSY need to be tested in order to imply a reduction in the MMR from an increased level of institutional deliveries.

Conclusions
In sum, the evaluation of the impact of the JSY on the MMR would require that the ongoing population-based surveys are supplemented by facility-based studies to generate data on two additional indicators:

(i) the proportion of pregnant women with complications among institutional deliveries, and (2) case-fatality ratio among them. This additional information will help to triangulate the effect of the JSY on the MMR. For example, an increase in institutional deliveries will have very little effect on the MMR if the proportion of pregnant women with complications among institutional deliveries starts to decline or if the case-fatality ratio among institutional deliveries starts to increase. On the other hand, an increase in institutional deliveries will imply a reduction in the MMR if pregnant women with life-threatening complications are able to reach facilities with adequate EOC in time and if the level of the MMR among those who reach these facilities does not increase with the increased workload.

NOTES
3 For example, see data from district-level health surveys conducted by International Institute of Population Studies.

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