

**The Continuum of Care for Maternal and Newborn Health in South Asia:
Determining the Gap and its Implications**

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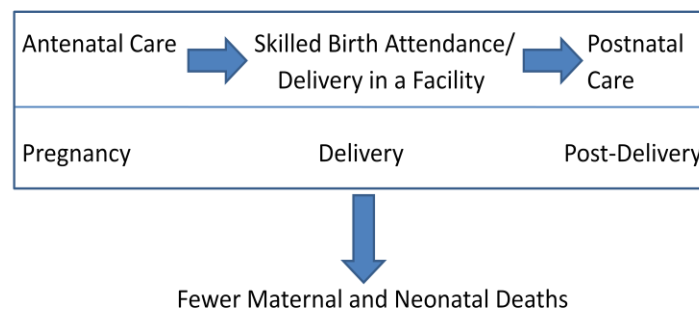
Background

Child and maternal health are two of the eight Millennium Development Goals with specific targets that countries are aiming to achieve globally. Maternal health has a large impact on the survival of young children and the lives of young children are most vulnerable in the first month of their birth. In the recent past, with the publication of the Lancet Neonatal Series in 2005, there has been a new focus on newborn mortality addressing children belonging to this age group (Lawn, Cousens and Jelka 2005). Although recent estimates show that the number of maternal deaths has declined around the world, it continues to be a serious issue (WHO 2010). An estimated 87 percent of maternal deaths occur in South Asia and sub-Saharan Africa. India, Bangladesh and Pakistan are among the eleven countries that contribute to 65 percent of all maternal deaths in 2008. According to the recent Demographic and Health Surveys, neonatal mortality rates range between 28 and 54 per 1,000 live births in these three South Asian countries. Given this scenario, there is increasing interest in understanding the determinants of these deaths across countries in order to plan interventions that can address them.

The Significance of the Continuum of Care

The literature shows that the lack of appropriate care at all levels (pregnancy, birth and post delivery) – i.e. antenatal care (ANC), skilled birth attendance (SBA), and postnatal care (PNC) -- is associated with poor maternal and newborn health outcomes. The role of perinatal health services factors such as the availability of SBA and postnatal care use has been shown to be key in its impact on neonatal mortality in Indonesia (Titaley et al., 2008). Research –both recent (Buor and Bream 2004 for example) and historical (van Lerberghe and DeBrouwere 2001) -- alludes to the important role of skilled birth attendance in its impact on maternal mortality. To emphasize its importance, the use of skilled birth attendants was identified as one of the MDG indicators for maternal health. Given this scenario, there is now a call for a continuum of care for maternal and newborn health focusing on a) a continuity of care over time for every woman and b) integrated service delivery in facilities (Kerber, de Graft-Johnson, Bhutta et al. 2007, de Graft-Johnson, Kerber, Tinker et al. 2006, PMNCH 2006, Tinker, Hoope-Bender, Azfar S et al. 2005 for example). Figure 1 shows the pathway for the continuum of care extending from pregnancy, to child birth and post delivery. A good referral system should connect the components of care with high quality services at all levels either in equipped facilities or community settings with trained staff.

Figure 1: Pathway for Continuum of Care



While programming for the implementation of the continuum of care is still under discussion, the need for care along this continuum is logical. Mortality for both mother and baby are highest immediately post delivery particularly because many births take place at home without the care needed. Even if women do not die due to the non availability of care at these times, lasting maternal and newborn morbidities can have consequences for both as well as for other household members. Equity in access to care is another concern. The poorest are most

disadvantaged in access to all components in the continuum of care thus bearing a larger burden of mortality (Gwatkin, Buhuiya and Victora 2004, Tinker, Hoope-Bender, Azfar S et al. 2005).

Research Questions

This paper uses data from the most recent DHS in four South Asian countries (Bangladesh, India, Nepal and Pakistan) to examine the use of maternal and neonatal health (MNH) services along the continuum of care by individual mothers who had a recent birth in the last five years. Before key interventions are planned to address this issue, there is a need to understand where the gaps in the continuum of care lie and what factors influence the existence of these gaps in care seeking. This analysis follows the path taken by a woman in understanding these issues. The analysis will also link the use of these maternal and newborn health services to the likelihood of neonatal death.

Specific questions that will be answered in this paper are:

- Did a woman receive all three continuum of care health services? Among those who received ANC services how many went on to have a skilled birth attendant and postnatal care?
- At what stage did the woman stop receiving services?
- What are the predictors of care at each stage?
- What are the differences by economic status, maternal education and urban/rural residence (access to health facilities)

Additional analysis will link the use of these three health services along with data on delivery complications and essential newborn care (if available) to the likelihood of neonatal death in these countries.

The analysis is constrained by the data available. While the DHS data can provide data on the socio-economic status of the household, it provides no information on the quality of care or the use of various sites by type of care (e.g., referral sites). Data on women's perceived delivery complications are available in only a limited set of countries. Another concern is the contact reporting by the woman, especially on the skilled birth attendant.

Data and Methodology

In this paper, we analyze data from the most recent DHS in South Asia: Bangladesh (2007), India (2005-06), Nepal (2006) and Pakistan (2007). Due to vast regional differences in India, the analysis will cover two Indian states with very different patterns in use of maternal and neonatal health services, Uttar Pradesh and Tamil Nadu. The unit of analysis is the most recent live birth of women aged 15-49 in the last 5 years. Multiple births are excluded from the analysis. Therefore, all women in the sample would have had an opportunity to receive maternal and child health services.

Continuum of care indicators

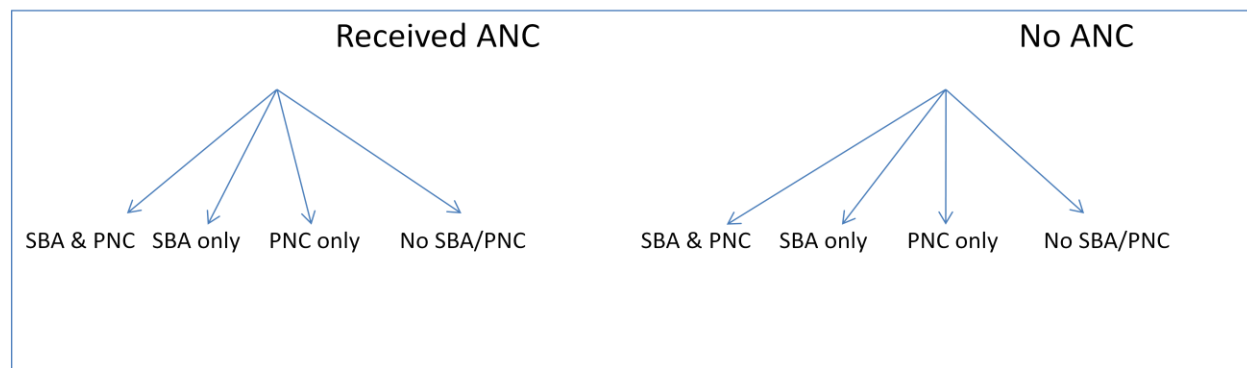
The analysis will examine descriptive patterns of MNH service use based on the pathway for the continuum of care to determine where the gaps in access to care lie.

The three continuum of care indicators examined in this paper are:

- Antenatal care - 1 or more visits/4 or more visits
- Skilled birth attendance – Nurse, doctor, midwife
- Postnatal care - within 24 hours of birth

Using women who received 1 or more ANC visits, and women who received 4 or more visits as the starting points, further analysis will examine patterns of subsequent MNH service use based on the pathway for the continuum of care to determine where the gaps in access to care lie. As figure 2 indicates, there are 4 possible paths that a woman can follow after receiving antenatal care. Women may also receive delivery care and postnatal care even if they did not have any antenatal checkups. However, this percentage is expected to be small.

Figure 2: Women's Use of MNH Services



Given this approach, additional information on the context of pregnancy (components of antenatal care, whether care was by a health professional, timing of antenatal visit), delivery (whether birth was at a facility, whether C section, delivery complications) and postnatal care (whether care was provided by a health professional, newborn care received) will be examined for all countries based on availability of data.

These patterns will also be examined by wealth quintile to determine use of MNH services by the poorest groups.

Statistical analysis (Continuum of care model)

Among women who received antenatal care for their last birth, a multinomial logit model will examine the predictors of the followup care (SBA and PNC) according to the continuum of care. Two regression models will be run, one for each of the following two samples.

Sample

- Women with 1 or more ANC visits for the most recent live birth in the last 5 years
- Women with 4 or more ANC visits for the most recent live birth in the last 5 years

Dependent variable

Combinations of maternal and neonatal health care services received during and after delivery include received SBA and PNC, only SBA, only PNC, no SBA or PNC

Independent variables

Woman's age, religion, education, husband's education, household size, wealth, urban/rural residence, birth order, whether child was wanted, death of previous children

Statistical analysis (Neonatal death model)

An additional logistic regression model will examine the likelihood of neonatal death.

Sample

Most recent live birth of women aged 15-49 in the last 5 years

Dependent variable

Likelihood of neonatal death

Independent variables

Key independent variables: A categorical variable showing combinations of ANC, SBA and PNC services used by a woman for the last birth will be added to the model to examine the role of access to these services on neonatal mortality. Data on delivery complications, whether C section and birth size/weight will be included in countries where data on these variables are available.

Control variables: Woman's age, religion, education, husband's education, household size, wealth, urban/rural residence, birth order, whether child was wanted, death of previous children, birth weight/size

Preliminary Results

Table 1 shows the current use of maternal and neonatal health services births by women in the four countries.

Table 1: Use of maternal and neonatal health care services by women for their most recent birth (%)

	Bangladesh	India	Nepal	Pakistan	Uttar Pradesh	Tamil Nadu
1 or more Antenatal care visits	60.3	76.5	73.7	63.8	66.0	98.6
4 or more Antenatal care visits	20.6	37.0	29.4	28.4	26.6	95.9
Skilled Birth attendance	18.0	46.6	18.7	38.8	27.2	90.6
Birth in a health facility	14.6	38.7	17.7	34.3	20.6	87.8
Birth was a C section	7.5	8.5	2.7	7.3	-	-
Any postnatal checkup	30.1	42.4	33.0	43.1	14.9	91.3
Postnatal care within 4 hours	20.9	27.3	19.7	26.6	-	-
Postnatal care within 24 hours	24.5	32.2	27.0	32.6	-	-
Postnatal care within 2 days	27.0	37.3	31.4	39.4	13.3	87.2

Source: Demographic Health Surveys, 2005-2007

Note: Data on ANC and postnatal care refer to a woman's most recent birth in the last 5 years. Data on skilled birth attendance refer to all births in the last 5 years. Data on postnatal care in India are based on non-facility births.

Uttar Pradesh and Tamil Nadu are Indian states.

More than 60 percent of women had atleast one antenatal visit during their last pregnancy. This percentage is higher in Nepal and India (mainly because of states such as Tamil Nadu where the level of care is very high). Only about one-third of women however have 4 or more visits. Although there are differences across countries, the general trend shows a decline in use of services as women move along the continuum of care from pregnancy to childbirth and postnatal care. Only 25-40 percent of women have a postnatal care checkup within 2 days of the child's birth. The availability of postnatal care soon after birth is also limited among births that did not take place in a health facility.

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