The effect of maternal–newborn ill-health on households: economic vulnerability and social implications

Guy Hutton
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Issues in maternal–newborn health and poverty—about the subseries

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Abstract

Pregnancy and childbirth are wonderful and life-changing events. They can also bring potential for illness and suffering. Women from economically developing societies are especially vulnerable during these periods. The overall objective of this paper is to undertake a review of the evidence base on economic vulnerability and social implications in relation to maternal and newborn ill-health, and to highlight the major gaps in this evidence base.

The social implications of ill-health have received little attention in publications; the searches undertaken have not brought to light empirical literature from developing countries explicitly linking maternal and newborn health status with decision-making at household level. Some studies deal with the impact of health-related expenditures (e.g. catastrophic expenditures) on family budgets, and on ways of dealing with this problem, but none appears to relate to episodes of maternal or newborn illness, and no studies detail the impact of maternal or newborn ill-health on participation in social life. A few studies describe social and family networks that help the mother get through this difficult period, especially in the presence of illness. In more traditional societies, family and relatives tend to provide emotional and material support, including rituals, whereas the wider social networks are more important for information and comparison support. Both have implications concerning how women deal with illness, including the search for health care.

Further research should focus on a better understanding of the relationship between health and household economy specifically related to maternal and newborn health, making use inter alia of the increasing number of comprehensive household surveys on the same households over time. What is needed is a deeper understanding of the implications of maternal complications and newborn conditions on the social standing of the family, on the woman herself, and on her ability and that of her family to participate in the social life of the community. In view of the psychological disorders associated with the perinatal period, and implications (knock-on effect) for the general well-being of the family, this topic deserves to be examined further through a more detailed literature review.
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1. Introduction

1.1 Maternal–newborn ill-health

For anyone who has been through the experience, or seen someone else go through it, there is no doubt that pregnancy and childbirth are life-changing events. Unfortunately, however wonderful an experience these events can be for many, they can also constitute a difficult period – bringing new stresses as well as the potential for illness and suffering. Although strict divisions between the developed and developing world are not always appropriate, some general comparative statements have elements of truth in them.

First, the rates of ill-health and death associated with the whole period of pregnancy and childbirth are generally much higher in the least economically developed societies, for many reasons. This places a massive economic burden – not to mention emotional and social hardships – on families and health systems in these societies.

Second, it is generally true that the least economically developed societies show a greater gender imbalance, which reduces the power of women to have control over reproductive decisions. Combined with a lower availability of modern contraceptive methods, this imbalance means that a significant proportion of pregnancies are not desired by the mothers in these societies. This takes much of the joy out of childbirth and child-raising, and tends to increase uncertainty and hardship associated with this period.

Third, the high rates of poverty still experienced across much of the developing world have important implications for childbirth, a fragile period of a family’s life. Even though the decision to have children may often be based on economic reasoning and a desire for security in old age, the economic ‘return’ only comes after significant investments have allowed children to become productive adults. Until this stage is reached, parents must make difficult decisions in an uncertain environment.

While these statements may not be true of all economically less-advantaged societies, they constitute a useful framework for the present paper – which has as its theme some of the ‘softer’ social and personal issues related to early motherhood and to illness associated with that period. These softer issues have received some attention in the academic literature, but the evidence is often piecemeal and has never been researched nor reported systematically. This paper, which searches the existing literature and reviews the various issues one by one, is a first attempt to bring some systematic approach into this field.

As indicated by its title, this paper deals in part with the wider human and socioeconomic consequences of maternal–newborn ill-health (including death) for individuals, households, and communities; as such, it fits in with overall research on these consequences.

1.2 Objectives

The overall objective is to undertake a critical review of the evidence base, to present findings, and to highlight major gaps. The main research questions to answer are the following:

- Does a high burden of maternal–newborn ill-health (MNIH) generate additional risk and uncertainty to individuals, families, and households? How? Are there gender differences of relevance?
- To what extent may a high MNIH burden influence long-term investment decisions by the household or individual?
- How and to what extent may a high MNIH burden have an impact on the individual’s ability to participate fully in the social life of the community, including the areas of empowerment and self-expression?
- How and to what extent may a high MNIH burden lead to vicious circles of underdevelopment and to poverty traps at the household level?
- Conversely, is there evidence to suggest that reducing the MNIH burden may contribute to the creation of a ‘virtuous circle’ of social and economic development?
- What is the empirical evidence for the existence and importance of social networks and social capital in coping with the economic and health risks associated with maternal–newborn mortality and morbidity?
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2. Methods

2.1 Overview of search strategy
The scope of the review is essentially defined by the research questions listed above. Three search strategies were used to identify potentially relevant papers:

• identifying relevant papers from an earlier review (1);
• undertaking a bibliographic database search – including PubMed, International Bibliography of the Social Sciences (ERL WebSPIRS 5), and EconLit – using appropriate search terms;
• following up references cited in all the above-identified papers.

Search terms were defined from the themes listed below, which relate directly to the research questions (Section 1.2 – Objectives):

• generation of additional risk and uncertainty (research question 1)
• impact on long-term investment decisions (research question 2)
• ability to participate fully in social life of the community, including the areas of empowerment and self-expression (research question 3)
• vicious circles associated with disease (research question 4) and virtuous circles associated with response to disease (research question 5)
• social networks and social capital for coping with adverse economic and health impacts (research question 6).

The search terms and search-term strings are listed in Annex 1. Target population terms (Annex 1, Table 1, Column A) and health condition terms (Annex 1, Table 1, Column B) were first searched separately. The results were then combined with the geographical search terms, focusing on the developing world. The search terms of the five individual search themes (Columns C, D, E, F, G) were then applied to those articles that had been identified in the three searches and the results were combined using the ‘OR’ function. Where the number of hits still remained important (this was in particular the case for MedLine), the search was further narrowed to those articles written in English which have an abstract (or those not written in English but which have an English abstract), published after 1980, dealing with human subjects, and including one or more of the search terms in the title or abstract.

In view of the complexity of the search – and because a large number of titles had to be assessed in a short space of time – a further search was made on fewer terms using some of the main keywords, such as “coping mechanism”, “poverty trap”, “economic vulnerability” or “social vulnerability”, “social network”, “empowerment”, “economic investment” or “social investment”. These terms were combined individually with the maternal search terms (“matern*”, “mother*”, “pregn*”) and the geographical search terms.

A final set of searches was made after external review of the draft version of the present paper. In particular, reviewers checked if evidence was available from the Matlab study – a study focusing on reproductive health interventions and surveillance in Bangladesh – and the social protection literature of the World Bank. The World Health Report 2001 was also suggested as a source providing information on mental health problems in the perinatal/neonatal periods.

Given the large number of hits expected from multiple keyword searches in several literature databases, an approach was devised to identify and gather only literature that was of high relevance for the review. Relevance was first judged from the article title. If the article was judged to be clearly not relevant, it was immediately discarded. If a judgement could not be made based on the title, the abstract was reviewed and a decision made. Where there was a possibility that the article was relevant, the full copy of the article was searched. However, in most cases, the title or abstract enabled a judgement concerning relevance.

2.2 Search results
Hit results are described in Annex 2 Tables 1, 2 and 3, which show 4 phases of the search:

• Phase I: Initial hits of terms used individually for each of the searches A to G.
• Phase II: Hits for each of the themes C to G combined with A, B and the geographical terms.

• Phase III: Hits once limits are applied (English language, publication after 1980, review articles only, human subjects, search term in title or abstract). Note that for EconLit, limits were not applied because the original number of hits was small.

• Phase IV: Articles retained after review of title and abstract.

Annex 2 Table 1 shows the results of this first broad search. PubMed had by far the most number of initial hits, with a total number of over eight million hits for the seven searches. This figure reduced to around thirty-eight thousand once the search terms were combined and duplicates eliminated. Once the search was further refined to review articles published after 1980 and dealing with human subjects, the number of hits fell to a little over two thousand; 18 of these were retained after an examination of titles and abstracts.

The International Bibliography of the Social Sciences yielded over 300 000 initial hits; this number was reduced to 852 once the search terms were combined and further refining reduced the number to an interim list of 66, of which 4 articles were considered relevant after an examination of titles and abstracts.

ECONLit had over 200 000 initial hits, which was reduced to 203 hits once the search terms were combined. All these articles were searched for relevance, and a total of 7 articles were retained.

The three bibliographic databases thus provided a total of 29 relevant (or potentially relevant) references, for which the full articles were sought.

Annex 2 Table 2 shows the results of a narrower search of the same bibliographic databases, combining maternal search terms, geographical search terms, and some of the more important search terms on the themes. Care was taken not to choose search terms that would have given a large number of hits with few relevant articles (e.g. the terms “risk” and “uncertainty” of common usage in many scientific medical articles). The search yielded 25 potentially relevant articles from PubMed, 2 from IBSS, and 12 from ECONLit, a total of 39 potentially relevant articles, for which the larger number of hits were linked to the term social network in PubMed (12) and to the term ‘labour’ or ‘work’ in EconLit (8). Following review of abstracts, 18 of these 39 articles were considered relevant for the review.

Annex 2 Table 3 shows the articles accessed from the reference list put together from an earlier global review of the literature (1). Of these, five were considered to be potentially relevant to the paper themes, two of which were eventually considered relevant following review of the abstract.

Table 1 shows that these searches provided a total of 61 articles, 37 of which were retained after review (Table 1, Sub-total). Follow-up of references in these 37 articles yielded a further 25 potentially relevant studies of which 23 were retained after review. This gave a total of 60 relevant articles.

In addition to the original searches, follow-up of special topics and articles suggested by the reviewers provided a few references – specifically the World Health Report 2001, and information from the World Bank’s Social Protection website.

Table 2 shows that the articles were fairly equally spread according to the three thematic sections under which the results are presented (see section 3 – Results).

2.3 Literature gathering and presentation

The following steps were taken regarding the papers judged relevant.

• If available from the Swiss Tropical Institute library or the University of Basel access to electronic journals, they were immediately accessed and printed/copied.

• If not, the Swiss Tropical Institute library was asked to access the paper from other sources (e.g. inter-library loan), taking into account loan cost, expected access time, and expected usefulness of the paper.

• Where neither of the above was considered applicable, the abstract alone was used to gather information on the study.
Table 1. Summary of articles accessed from initial search

<table>
<thead>
<tr>
<th>Source of articles</th>
<th>Total before detailed abstract review</th>
<th>Total after detailed abstract review</th>
</tr>
</thead>
<tbody>
<tr>
<td>Articles from database search (broad)</td>
<td>29</td>
<td>17</td>
</tr>
<tr>
<td>Articles from database search (narrow)</td>
<td>39</td>
<td>18</td>
</tr>
<tr>
<td>Articles from search of global review</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td><strong>Sub-total</strong></td>
<td><strong>61</strong></td>
<td><strong>37</strong></td>
</tr>
<tr>
<td>Articles obtained from follow-up of reference lists</td>
<td>25</td>
<td>23</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>86</strong></td>
<td><strong>60</strong></td>
</tr>
</tbody>
</table>

*Since a number of articles in the different searches were the same, this number is not a cumulative total.

Table 2. Summary of primary subject of relevant articles

<table>
<thead>
<tr>
<th>Source of article</th>
<th>Uncertainty and decision-making</th>
<th>Social networks and coping</th>
<th>Circles of poverty and development</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial searches</td>
<td>5</td>
<td>18</td>
<td>14</td>
<td>37</td>
</tr>
<tr>
<td>Follow-up of reference lists</td>
<td>19</td>
<td>4</td>
<td>0</td>
<td>23</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>24</strong></td>
<td><strong>22</strong></td>
<td><strong>14</strong></td>
<td><strong>60</strong></td>
</tr>
</tbody>
</table>

Only after relevance was ascertained were articles evaluated in terms of their quality. The review sought many types of information, mostly of a qualitative or descriptive nature. Qualitative information is based on direct evidence (data collected to answer study questions), on subjective viewpoints, or on an informal synthesis (the source of which may be stated or not) of conclusions pertaining to the information presented. In the case of evidence collected directly from the study, it was possible to apply an evaluative framework such as a Cochrane Review, where the scientific approach can be explicitly assessed using the Quality Assessment Protocol (2); in the case of other evidence, it was difficult to apply such an evaluative framework.

The evidence collected is presented in Section 3 of this review under three main subsections, relating to the research questions listed in Section 1.2. These subsections can be summarized as:

- generation of uncertainty by maternal–newborn ill-health, and its impact on decision making;
- social implications of ill-health, such as participation in social networks and coping mechanisms;
- dynamic links between ill-health and development (vicious circle), and potential positive impact of interventions (virtuous circle).
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3. Results

3.1 Evidence on the generation of uncertainty by maternal–newborn ill-health, and its impact on decision-making

3.1.1 Introduction
The search yielded very little empirical literature explicitly linking maternal–newborn health status to decision-making at the household level. This section briefly reports what has been found to address this issue as it relates to work-seeking and investment in child-schooling, and also to related areas such as the impact on households of stress, depression, and HIV/AIDS — all of which cause considerable uncertainty and have important health and resource implications. In some societies, the gender of a child has significant health and economic implications, and this topic is touched on briefly at the end of this section.

3.1.2 Determinants and impacts of mothers seeking work
A handful of studies addresses the question of mothers seeking work after delivery, mainly in the developed world. Several studies deal more with the availability of child care options than with the health status of mother or infant. A brief literature review in one study (3) covers investigations from the United States of America that have examined the impact of health on the decision to work. Another shows that disability decreases labour-force participation of mothers, and also that welfare dependency is substantially higher for single mothers in poor health (4). A lower maternal health status and the presence of other members of the household reduce hours of work undertaken by the mother (5). Low health status is highlighted as significantly decreasing the probability of employment, whereas the offer of health insurance from the employer increases the probability of mothers working (6).

Research from the USA examines links between child health status and the probability of single mothers working (3). There is evidence (J. Mauldon, unpublished mimeograph, 1992 and (7)), both for and against mothers reducing the time they spend working because of the presence of children with disabilities: on the one hand, there is greater need to care for them (hence, reduction in the time spent working); but on the other, increased expenses related to the child’s health condition may also require the mother to take up more work (hence — usually — increase in the time spent working). The net effect will depend on individual circumstances — for example, whether the woman has access to an extended family, to social networks, or to low-cost or free government services that can help care for the child while she is working.

In their regression model, Wolfe & Hill (3) test the effect of a woman’s own health on her employment status, the effect of losing state health insurance (Medicaid), and that of a disabled child’s health status; they also examine the impact of health on the potential wage-rate a woman could earn. They conclude that: (i) poor maternal health reduces labour-market participation; (ii) poor health increases the value of being covered by Medicaid, and therefore the potential for labour-market participation; (iii) poor child health reduces labour-market participation by the mother; and (iv) poor maternal health reduces wage-rates and therefore the mother’s potential earnings. Policy simulations by the same authors also find that training and employment schemes for single mothers are less likely to be effective for those with children who have health problems (3).

Another report from the USA similarly states that poor health in children reduces the mother’s probability of working, the mother’s hours of work, and the father’s hours of work (8). Wage subsidies and welfare increases for working mothers are unlikely to increase the labour-force participation of single mothers in poor health or with disabled children, because of limitations on work hours and type of work (3).

The question dealing with the impact of ill-health on the possibility of mothers working can also be examined in reverse (impact of mothers’ work on their own health), to arrive at a deeper understanding of the relationship between economic status and health status. For example, the implications of mothers taking up work again have been studied by Anderson, Butcher & Levine, who examine the impact of mothers’ work hours on children’s health status (9), with special emphasis on the problem of overweight in children (as the number of hours worked by the mother increases, so does the probability of the child being overweight – for which no causal explanations are advanced).
Another study examines the impact of mothers’ work on children’s cognitive development in the USA, finding a negative relationship between the two (10). A third USA study examines whether the fact that mothers go back to work affects breastfeeding (11). Findings include: (a) the fact that mothers go back to work within three months after delivery reduces the initiation of breastfeeding by 16–18%; and (b) those mothers initiating breastfeeding and going back to work within three months have a reduced duration of breastfeeding (by 4–6 weeks). The effects appear to be less marked for those going back to work at a later date (after three months). A fourth study, from India, shows that women become empowered through employment soon after childbirth (12); spending on health care for children’s illness episodes is negatively correlated with maternal employment.

Finally, a book entitled *She works/he works: how two-income families are happy, healthy and thriving* and based on research from the USA, concludes that families with two working parents often live happier, healthier, and more rounded lives than members of the family of the 1950s where the woman usually stayed at home (13). Unfortunately, the authors do not specify how other (potentially confounding) factors have been taken into account.

While all these studies provide insights into determinants and impacts with regard to mothers going back to work, many factors confound an understanding of the exact relationship between work status and health, and unwarranted generalizations should not be made. For example, while a regression model such as that used in (3) provides a scientific approach to analysing the multiple determinants of labour-market participation, results are neither guaranteed to be highly robust nor to be generalizable to other settings.

### 3.1.4 Stress of having a baby

It is unlikely that any woman or her partner would deny that pregnancy and the period thereafter constitute an extremely stressful time, requiring increased planning, energy, and expenditure. An important part of the stress is caused by uncertainties linked to the unknown health status of the fetus, by the possible classification of the mother as a ‘high risk’ case; and by economic insecurities. These stresses may increase when there is already one child or more or in the case of multiple pregnancies; they can be partly neutralized through support from friends, relatives, and sometimes the state, but nevertheless it is a difficult period.

A trial of psychosocial support in Latin America reports that 50% of women experience “high” psychological distress during their pregnancy (15). In a study in Nigeria (16), the stress experienced by mothers of twins is found to be significantly higher than for mothers of singletons. Parity, perceptions of problems in caring for children, and the possibility of access to a functioning and reliable health system also play a role in determining stress levels. In many societies, for instance, women have less access to health care than men because of their household responsibilities, their lack of control over the household budget, or because they must seek permission from the male head of household (17).

One USA study of African-American women in Harlem, New York, examines their reproductive experiences (18). These women already experience substantial stressors associated with environment, housing, economic concerns, health care, and social service delivery. The conditions may be similar in many developing country settings, taking into account differences in the political and social context. The study shows that pregnancy clearly serves as a catalyst to increase the actual and perceived severity of stress. During pregnancy, women attempt more actively to access adequate income, job benefits, nutrition, child care, access to quality health care, and a safe environment.
3.1.5 Depression before and following childbirth

High rates of depression associated with childbirth have been reported in many parts of the world (19). Postnatal depression is reported in 10–20% of mothers in their first year postpartum (20). While the World Health Report 2001 lists childbirth as one of the factors potentially responsible for high rates of unipolar depression among young women (21), it gives only cursory attention to postnatal depression. The symptoms of depression include low mood, anhedonia, forgetfulness, irritability, anxiety, and deep disturbance, leading to impaired functioning. The resulting inability to care for the new infant and wider family is clearly significant. Postnatal depression in the mother has been shown to have impact on partners (e.g. depression) and on infants (e.g. negative cognitive, behavioural, and emotional outcomes) (20, 22).

Depression is a clinical condition, and has multiple causes. A study of over 300 Filipino, Turkish, and Vietnamese immigrant women in Australia (23) finds the main causes to be isolation and homesickness (29%), lack of support or marital problems (25%), physical ill-health and exhaustion (23%), family problems (19%), and baby-related issues (17%). As shown in a study from Goa, India, the main causal attributes for postnatal depression focus on economic difficulties, lack of practical support, and poor marital relationships—the latter leading to the inability to share feelings and express concerns, as well as disengagement of partner from child care and from support to the mother (22).

Clearly, the new life situation and life role for the mother, combined with the uncertainty these entail, is one major factor that pushes a mother into a depressed state. Another contributing factor would be the result of complications arising from childbirth, such as obstetric fistula, which often leads to incontinence and reduced sexual function. This has potentially major (negative) implications for the social standing of a woman and the resumption of normal relations with her partner following childbirth (see Section 3.2).

When a mother (or mother-to-be) is depressed, there is often greater perception of illness and suffering, and possibly greater illness, especially if the infant is not cared for adequately. An investigation in a rural area of Pakistan finds depression rates of 25% antenatally and 28% postnatally—with significantly higher rates of maternal disablement, more threatening life events, and poorer social and family support than among non-depressed mothers (19). Rapid changes in traditional family structures and practices increase the risk of depression.

Another review of the literature (24) finds little evidence for a link between maternal depression and child health (specifically child growth and child mortality). On the other hand, children of depressed parents are found to have more physical health problems such as allergies, asthma, frequent colds and coughs, headaches, and indigestion than children of non-depressed parents (25), and children of mentally-ill mothers in one study show more hospital admissions and higher mortality rates than controls (26).

Conversely, the health status of the child may affect that of the mother. One of the very few studies to be carried out in a developing country—on children in an urban slum in Brazil—found that mothers of malnourished children show a higher rate of mental disturbance (as measured by a psychiatric screening instrument) than the mothers of normal children, although the authors state that it is “difficult to evaluate the direction of the relationship between malnutrition and the mothers’ mental health” (27).

In part because of depression during pregnancy and postpartum, women are at an elevated risk of suicide during, or soon after, pregnancy. The World Health Report 2001 (21) states that suicides of women are a recent and growing problem in many countries, and claims that around 15–20% of depressive patients end their lives by committing suicide. However, as noted by the report, screening programmes for mental disorders are few even in industrialized countries, so that there are few formal channels for identifying depressed women and thus reducing their chances of suicide.

3.1.6 The new scourge: HIV/AIDS

HIV/AIDS has a huge impact on the family, society, and national economies. As argued in the context of Africa as early as 1991, HIV/AIDS places a double burden on the shoulders of women: not only in their role in preventing the disease, but also because lack of support from governments...
and organizations puts the brunt of caring for its victims on them (28). HIV/AIDS thus causes huge uncertainty and insecurity in society and affects household decisions through changes in the composition of households (fewer adults, more orphans). However, this literature search revealed no studies reporting on the impact of perinatal HIV/AIDS on families.

3.1.7 The “gender shock” phenomenon
Although not necessarily related to ill-health, the gender shock theory tested in India (29) shows interesting resource-allocation behaviour at household level. The study compares savings rates and incomes between households following the birth of a son compared to the birth of a daughter. Savings and income levels observed following the birth of a son are significantly lower than those after the birth of a daughter; and consumption of health care, fats and oils, and other goods increases. This is explained by the fact that, with the birth of a daughter, families already change their economic behaviour in anticipation of the future costs associated with a daughter (mainly the dowry, but also lower income potential). On the other hand, the birth of a son is associated with a celebration period and higher consumption.

3.2 Evidence on the social implications of ill-health – e.g. participation in social life and coping mechanisms

3.2.1 Introduction
The social implications of ill-health constitute a topic that has received little attention in the literature. There are some publications on the impact of health-related expenditures on the family (e.g. catastrophic expenditures), and ways of dealing with these, but none relates to maternal or newborn illness episodes. Although it is generally accepted that some complications associated with childbirth (e.g. obstetric fistula) have potentially major social implications for a woman (e.g. by generating stigma), no studies in the present searches detail the impact of maternal or newborn ill-health on participation in social life.

Other possible avenues, such as the health-related stigma literature, and literature on certain maternal complications known to have social implications, may reveal relevant material. The searches identified a few items on how social and family networks help the mother in getting through this difficult period, especially in the presence of illness. Belonging to a social network has implications for the use of health services and health products (e.g. contraceptives). While this in essence means a turning round of the study question, the material gathered should still be seen as relevant since it describes the relationship between health and social or cultural life.

3.2.2 Role of partner and other close kin
As shown in Japan, a pregnant woman’s husband, mother, sisters, and mother-in-law are especially important for providing social support, covering mainly emotional, and material support, while friends provide information and comparison support (30, 31). The partner may be reported as playing a negative role in terms of relationship with the mother during pregnancy and childbirth (32). For example, the event of impending motherhood may serve to distance the partner from the mother-to-be, through lack of understanding of the woman’s emotional and physical needs, concerns over who the father is, and the partner’s own concerns about the future security of the family. This leads to a low level of support from the partner, and in many cases to marital violence – a widely reported phenomenon (33).

Despite these findings, another study in Japan shows that women, on average, most frequently nominated their husbands as the main support provider for ‘given’ social support – emotional, informational, instrumental – as well as for ‘giving’ support – nurturing opportunity and general confiding (34). A husband’s poor ‘given’ support was predicated based on premenstrual irritability of his partner, lower female education, smoking, and past experience of pregnancy termination. A husband’s poor ‘giving’ support was predicated based on the mother’s older age, smoking, and past experience of delivery.

A study on adolescent mothers in the USA notes that pleasure brought about by the pregnancy was positively associated with the receipt of assistance from the mother’s mother, and with favourable opinions from friends (35).
3.2.3 Sociocultural values and customs
In an Andean community in Peru, as in many countries throughout the world, women are heavily devalued, and are seen as physically, socially, and economically inferior. For example, negative beliefs about women’s bodies have negative effects on women’s roles and position compared to men. Illnesses are related to perceptions about vulnerability, and women are perceived to be more vulnerable to emotion-based illnesses. They are also under economic stress in that they have limited means to ensure the subsistence of the family. They are also often blamed when a child gets sick or dies, and do not have the same outlets open to them for emotional release as do men, e.g. drinking, violence, migration, and extramarital affairs.

3.2.4 Importance of social networks
The same USA study of African-American women in Harlem, New York (cited earlier) also shows the importance of social networks in these women’s lives. Networks — often women-centred — that provide instrumental, emotional, and informational support influence economic survival and childbearing decisions. These networks are especially important given the relatively high proportion of unmarried pregnant women and households headed by women in this area. A study from Nigeria similarly shows that stress scores in a Nigerian population of new mothers are significantly lower for those with higher perceived levels of social support.

Material support is important. A study from Poland in the mid-1990s indicates the extent of private inter-household private financial transfers, flowing from high-income to low-income households of the same family. These transfers are especially targeted to households with young couples, families with many children, and those experiencing illness; the authors also report that, since the start of economic transition in Poland, family networks have noticeably weakened.

In one study examining coping mechanisms associated with pregnancy, Japanese women rate social assurance — especially from the woman’s mother — as the most important coping strategy, while American women rate acceptance highest. This illustrates the importance of cultural differences in coping.

3.2.5 Rituals associated with pregnancy and childbirth
Rituals are an important part of human life, and are recognizable in most societies whether explicitly or implicitly practised. One study spanning three very different groups of women (Anglo-Celtic, Arab, and Vietnamese) identifies three distinct stages associated with birth: (a) separation of the individual from her old environment; (b) a liminal period (transition between old and new); and (c) a stage of incorporation involving welcoming and celebration of the individual’s new status.

In Viet Nam, for example, the liminal period involves 40 days of bed-rest after giving birth, followed by a celebration day for the one-month old baby. The three stages are also reflected in Arab society, where motherhood is revered and enjoys great recognition and honour. During the 40-day postnatal period the mother is absolved of her normal duties, and receives a high level of support, especially from her mother and other family members. Likewise, the traditional confinement of mothers until 40 days after childbirth was found to be a protective factor for postnatal depression.

Industrialized societies have significantly fewer explicit rituals, as well as more deficiencies in social support, thus lending weight to the proposal that rites of passage serve a protective function for the emotional well-being of the new mother. However, other societal pressures in industrialized countries may explain the apparently higher rates of postnatal depression there. The quality of relationships with the new mother’s partner and her own mother are two of the key determinants of postnatal depression, as well as expectations on the side of the new mother for support and other personality factors.

3.2.6 Impact of social support networks on health-service use and health outcomes
A study from Mali explored the influence of women’s social networks on child survival rates in two ethnic groups, the
Fulbe and the Bamanan (40). For the Fulbe, there was a positive correlation present between the probability of child survival and: (a) the importance of practical support (“helping out”); (b) cognitive support (“advice” and “information”); and (c) emotional networks. For the Bamanan group, the higher proportion of network members living in the household had important implications for the probability of child survival (positive correlation), although the odds ratio did not suggest a big effect.

A study from Thailand shows that the level of social support received by women during pregnancy does not determine the use of health services, in particular the use of antenatal care (41). Although a small positive correlation was found in the sample, it was not statistically significant. The study was limited by the fact that there was not enough variation in the levels of support to permit strong conclusions about social support and health-service use. In a USA study, high-risk pregnant women with denser social networks attended fewer parent group sessions than those with less dense networks (42).

A negative example of social influence on care-seeking behaviour occurred in a study from Mozambique, which found that fear of sorcery and bad spirits prevent pregnant women from seeking early antenatal care (in 57% of cases). Many women hide their pregnancies and delay going to the antenatal clinic until they can no longer conceal them; only to those people with whom they are most intimate do they reveal their status.

Presumed jealousy and envy of the woman’s status are cited as being the main sources of sorcery and bad spirits. In some cases where the pregnancy is not sanctioned by their family (especially when the pregnant mother is young), the fear is that material and spiritual protection will be withdrawn from them. Women perceive that personalistic reproductive threats derive primarily from the breakdown of social networks and kin relationships because of urban migration, dislocations due to war, and changes in housing arrangements – all leading to greater social vulnerability (43).

### 3.2.7 Impact of social support networks on fertility decisions

Another study from Mali examines the factors influencing fertility decisions in Bamanan women (44). Fertility is measured using children ever born and ever-use of contraceptives. It decreases where conjugal kin are represented in a social support network, but increases when partners, the woman’s mother, or unrelated older women are part of the network. The older the woman is, the more pronounced are the network effects. A study from Kenya (45) finds a strong positive relationship between contraceptive use by the mother and the number of contraceptive users in her network, and confirms findings from several other earlier studies. A study from north-east Thailand finds that the stronger the kinship ties between households within a community, the higher the likelihood of using temporary modern contraceptive methods (46).

Social networks and cultural attitudes generally also have an important bearing on the number of children. While the search found no studies that presented evidence on the influence of gender preference (in most societies, preference for a boy) on fertility decisions and family size, it is a possible determinant of the number of children a family has.

### 3.2.8 Implications for public sector interventions

In Latin America, a trial on psychosocial support during pregnancy shows that the main interventions (reinforcement of social support network, provision of emotional support, knowledge improvement, improved health-service utilization) do not improve psychological outcomes during or after pregnancy (15). Other studies, including one from South Africa (47) have shown that professional support systems play a limited or minimal role in the support of pregnant women, while a much more important source of support is the close social network.
3.3 Evidence on dynamic links between ill-health and development (vicious circle); potential for a positive impact of interventions (virtuous circle)

3.3.1 Introduction
In much of the literature examining the links between health status and development, the influences of maternal–newborn health status on development remain little more than conjecture. From a reading of the economic development literature, there emerges the vicious circle theory of under-development – whereby the economic situation of households continues on a downward spiral because of unstoppable developments arising from illness episodes (e.g. a catastrophic cost pushing a family into poverty, from which it cannot climb out).

There are good reasons to think that there is a similar and important link in maternal ill-health. First, there is the influence of maternal health on the earnings of the household and the development of the child (this was covered briefly in earlier sections): when a mother is not well enough to work, deterioration occurs in the economic situation of the household – reducing the probability that children will be schooled or that children will survive. Second, there is the influence of the neonate’s health on household expenditure (and on resources available for non-health items), on the long-term development of the child, and on productivity of the child as it progresses towards adulthood. Children who suffer serious early illnesses may have physical and/or mental difficulties later in life that affect their net contribution to the household and to society in general.

The effects of ill-health on household resources are thus both short-term and long-term, and may lead to a downward spiral in households where the conditions to stop this deterioration (e.g. social support, state assistance, savings) do not exist. By implication, where these effects do exist, there is clearly some option for interventions that change or reverse the impact – thus leading to a ‘virtuous’ circle of development.

3.3.2 Demand for children
In development literature, demand for children is heavily influenced by theories of net economic value – which is usually stated from a private (household) perspective (48, 49). In planned economies, or economies where there is a strong influence of the state over population growth, this theory can be looked at from the perspective of the overall economy. The household net economic value of children is especially important in societies without a welfare state – the traditional provider of pensions, disability benefits, and child care. In economies without such a welfare state, having children is an investment – one that matures only many years after the child’s birth (48) and has two components: (a) direct consumption of goods (e.g. food) and services (e.g. health care, education) with direct financial implications; and (b) time spent by parents and others on the care of the child, which takes them away from other productive or paying activities.

Therefore, it can be argued, the death of a child represents a wasted investment – a greater loss being associated with the death of older children. The implication (and this is an argument used by many development specialists) is that, if the probability of survival is increased, the decision on how many children to have will surely tend towards reduction (i.e. it will inform the equation – often made in the minds of people – that if we have X children, Y will survive). Such a hypothesis is heavily supported by empirical analyses, although there are other reasons for reducing fertility which must be taken into account (e.g. the increasing costs of bringing up children in cities). The conclusion is clear: intervene by providing better maternal, neonatal, and child health services to more of the population and thus reduce both fertility needs and the reproductive risks to the mother.

3.3.3 Reducing unintended pregnancies
When a pregnancy is neither intended nor wanted, there is a higher risk of death and morbidity for the neonate (leading to expenses for the family), as well as an increased likelihood of the woman choosing to abort – with consequent health risks for her (50, 51). The World Health Organization estimates that 20 million unsafe abortions take place in the world per year, resulting in approximately 70 000 maternal deaths. Data from surveys in five developing countries show...
that children unwanted at conception have worse outcomes than other children, although the strength of effect varies by country (51). Because of concomitant food/nutrition shortages in the family, unintended pregnancies also have serious consequences for other children in the household, especially in poor households.

To reduce unintended pregnancies, it is important not only to provide the necessary reproductive health services but also to change the societal norms or beliefs that prevent women from seeking family planning. An increase in the relative bargaining power of women reduces fertility and child mortality rates (49). Emergency (postcoital) contraception may reduce by half the number of unintended pregnancies due to non-use or misuse of contraception (50). Continued breastfeeding may also help prevent unintended pregnancies and has been found to be effective in amenorrhoeic and exclusively breastfeeding women less than six months postpartum. Garenne & Joseph (52) cite the role of family planning programmes on reducing fertility rates in Africa, with linked changes in individual behaviour such as delayed marriage and induced abortions. In Turkey, the power of indigenous lay carers has been shown to be important in the uptake of family planning as well as in diarrhoeal disease control, contributing to a sense of empowerment (53).

An empowerment programme for HIV-infected mothers has been tested in Thailand, with a significant increase in levels of coping ability, quality of life, and maternal role adaptation (54). Mothers report greater autonomy, accountability, collegiality, and communication through the empowerment programme. The most effective interventions include peer-group meetings, professional support on infant rearing and maternal self care, stress management, access to available social support, and alternative medicine.

### 3.3.4 Improving knowledge and maternal sensitivity

One way of improving pregnancy outcomes is to improve knowledge – not only of the woman but also of those people that influence her, including her family, social network, and traditional carers. Other linked issues were uncovered in the literature review. For example, maternal sensitivity has been examined in a low-income urban population in Chile, sensitivity being described as how appropriately mothers reacted to negative signs or symptoms of the child’s health (55). Maternal sensitivity – determined by maternal education, maternal weight, and marital satisfaction – is found to influence the child’s nutritional status, the security of the child, and the child’s behaviour patterns. As an important determinant of nutritional status – and eventually the child’s health status – it is important that mothers apply both knowledge and sensitivity in the interactions with their children. Public interventions – through the media and the extended health system (e.g. community nurses and midwives) – can improve both these important factors.

#### 3.3.5 Increasing spending on health care and improving socioeconomic conditions

The improvement in health status resulting from better and more available maternal and newborn health services is well documented; in the early 1990s, this was reported in several key international publications (56, 57). Evidence-based interventions that have received special interest in recent years include antenatal care (58), emergency obstetric care (59), and neonatal care (60). Family planning continues to receive considerable attention as well as funding from international agencies.

The 2001 Commission on Macroeconomics and Health (61) calls for increased spending on selected maternity-related interventions – including antenatal care, treatment of complications during pregnancy, skilled birth attendance, emergency obstetric care, postpartum care, and family planning. In brief, more resources should be spent on reproductive and child health services, which remain notably underfunded despite the global funding initiatives for several priority disease areas (malaria, HIV/AIDS, tuberculosis, vaccine-preventable diseases).

Socioeconomic improvement is a more general and broader area of intervention. There is considerable evidence showing the inverse association between socioeconomic status and women’s health (morbidity and mortality), especially in developed countries (62). In Cameroon, Kuarte Defo examines the potential impact of various socioeconomic vari-
ables on women’s health, finding significant influences on maternal and child health (63). These include:

- quality of neighbourhood and household amenities (sanitation, drinking water, electricity) – poor quality has a deleterious effect;
- women’s educational status (domestic autonomy, observation of taboos, and attitudes towards breastfeeding) – more education means better health;
- women’s employment (ability to pay for health services) – participation of women in the labour force leads to better health;
- ethnicity (beliefs, customs, family size, status of women) – important ethnic differentials on women’s health exist; and
- marital status – unmarried women have worse health outcomes.

These are important areas in which the welfare state can intervene to improve the living conditions of the population as well as education and participation of mothers in the labour force.
The effect of maternal–newborn ill-health on households: economic vulnerability and social implications
4. Conclusions and recommendations

4.1 Methodological considerations

In designing a study to review the literature on the specified research questions, the expectation was that not many directly relevant studies would be identified. This particular review faced challenges in presenting an evidence base for various reasons.

- It was expected that few, if any, studies would have addressed these questions as primary foci of research studies. This expectation – that only bits and pieces of information would be gathered – proved correct. However, narrowing down from a large initial number to a manageable number of hits for detailed review meant that there was a risk of excluding relevant articles before detailed review.

- The high levels of subjectivity of and uncertainty about the topics of this review and the difficulty in quantifying or putting values on many of these areas led to anticipation that very few objectively verifiable data would be available.

- The questions which were raised touch on many different disciplines, themes, and topics – e.g. economics, health economy, sociology, anthropology, and individual and household behaviour. The paper is thus wide-ranging and requires an understanding of all these areas. Combined with the lack of robust evidence on research questions, there were considerable challenges to presenting a focused review incorporating all the evidence.

Of 73 studies in the final sample of possibly relevant studies, only a small number was found to be directly relevant. Most studies provided some background to the topic areas, but did not directly answer the study questions nor feed the evidence base. There are considerable holes in the currently available knowledge, and much remains to be done to inform international policy-makers about the topics of this review.

Given the difficulties described above and the approach taken to identifying relevant studies, some studies may have ‘slipped through the net’ – e.g. studies from other geographical areas, from non-English articles without at least an English abstract, and from articles published before 1980. Furthermore, the search did not cover books or publications which are not included in PubMed, EconLit, or the International Bibliography of the Social Sciences. The World Bank search included only those articles which had been identified in an earlier overall review (1)

4.2 Conclusions

From the articles identified as relevant and accessed for this review, several conclusions can be drawn, under each of the research questions identified in Section 1.2.

1. There is a clear association between maternal–newborn ill-health and heightened vulnerability with added uncertainty – as borne out by literature reviewed from both developed and developing countries. The implications of maternal–newborn ill health for women and their families are financial, psychological, and social; their overall effect depends heavily on contextual factors, which also influence vulnerability to ill-health and how women and their closest relatives can cope. For example, a newborn affected by illness is in greater need of care from the mother and at the same time imposes on the family a greater financial burden, which may require the mother to take up work again (thus giving her less time for her baby). The net effect of these influences will depend on individual circumstances, and will not be the same in the developing and in the developed world (where the majority of studies were conducted). A second effect of importance is the psychological effect of ill health on the mother and on the family. Ill-health behaves as a catalyst to increase the magnitude of actual and perceived severity of the many stresses associated with pregnancy and childbirth; it also predisposes the mother to a state of depression.

2. Evidence is mixed concerning positive or negative correlation between fertility and investment in schooling. Some studies from Africa have shown no trade-off in rural areas, whereas in urban areas the investment in child-schooling increases as fertility declines.

3. No studies were found detailing the extent to which maternal–newborn ill-health affects the individual’s
ability to participate in the social life of the community. While some complications associated with childbirth (e.g. obstetric fistula) have potentially major social implications for a woman (e.g. stigmatization), none of this was uncovered in our literature searches.

4. No literature in this study provided evidence on the effect of poor maternal–newborn health on economic indicators (vicious circle), whether macroeconomic indicators or indicators of family welfare. This is partly due to difficulties and uncertainties in showing the links between maternal–newborn health and economic outcomes; it is also partly due to the fact that the topic of maternal and newborn health has had a lower priority than other diseases such as HIV/AIDS and malaria (in so far as such literature reviews have been undertaken). Although there is no evidence for the macro/overall impact of maternal–newborn interventions on economic indicators, the resulting improvements in the health of a mother and/or infant are likely to lead to a more prosperous household – if only through impact on earnings and expenditure patterns of families suffering from maternal and newborn illness, when compared to healthy families. Confirmation of such associations would require detailed statistical analyses linking household budget surveys and health surveys, which were beyond the scope of this review.

5. Assuming that a vicious circle exists (see point 4 above), it is likely that a countervailing ‘virtuous’ circle based on health and other social interventions with known efficacy can be established (e.g. improved access to formal health services including contraception, improved population knowledge on maternal–newborn ill-health, and – where possible – culturally-appropriate changes in attitudes and behaviour to ensure that mothers are not treated unfairly). Since psychological ill-health is related to difficulties of economic environment and to the mother’s life stage, conditions such as depression can be addressed. Many societies (especially the more traditional ones) have established and functioning rituals for preventing these conditions and for dealing with them. However, effective public interventions for psychosocial support are limited.

6. Conclusions from studies in a range of countries point to the importance of social networks in preventing and combating negative mental conditions, covering both family and relatives as well as wider social contacts such as friends and peers (see also point 5 above). The role of social networks in promoting appropriate health service utilization by pregnant women and their babies is potentially important, but their actual influence is unclear. While information received from social contacts may be key in encouraging a woman to seek formal health care, advice and support from family and friends may also reduce the felt need of the mother for health services.

As already stated, this review has uncovered some interesting and important studies that can inform the debate about effective public interventions. However, the review was largely exploratory – as opposed to comparative and evaluative – and its conclusions are relatively weak because of the limited evidence base on the topics covered.

4.3 Recommendations
The following recommendations – for future work in the areas of this review – are based on identified gaps and potential for research.

1. To improve understanding of the relationship between health and household economy, specifically related to maternal–newborn health. Given the availability of detailed and quality data from household surveys that collect data on both economic and health aspects, analyses may provide useful information on the impact of ill health on the household economy, including the factors that determine whether the mother is again able to take up productive or income-earning work. The twin questions of vicious and virtuous circles can then be further examined.

2. To explore to a further extent the specific implications of maternal complications (e.g. fistula, stillbirth) and newborn conditions (e.g. mental disability, physical deformation) on the social standing of the family, on the
woman herself, and on the ability of the woman and family to participate in the social life of the community.

3. To examine this topic further – through a more detailed literature review – including the importance of psychological disorders associated with the perinatal period and the implications thereof for the general well-being of the family ('knock-on effect').
References


Annex 1. Search terms

Table 1. Search terms for the populations and themes
Star truncation (*) used where multiple endings were possible, e.g. the term “disab*” would pick up disable, disabled, disability, disabilities.

<table>
<thead>
<tr>
<th>A. Target Population</th>
<th>B. Condition</th>
<th>C. Theme 1 Uncertainty</th>
<th>D. Theme 2 Investment</th>
<th>E. Theme 3 Participation</th>
<th>F. Theme 4 Dynamics</th>
<th>G. Theme 5 Coping</th>
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Search strings

Target population
Matern* OR Pregnan* OR Mother OR Baby OR Babies OR Neonat* OR Perinat* OR Child* OR Infant* OR Newborn OR Toddler

Condition
Ill health OR “illhealth” OR Disease OR Morbidity OR Sickness OR Ailment OR Malady OR Illness OR Affliction OR Unhealthy OR Sick OR Disorder OR Disab* OR Complaint OR Condition OR Infirm* OR Infect* OR Death OR Mortal* OR Decease OR Die OR Dying OR Perish OR Abortion OR Aborted

Geographical location
Low-income countr* OR Middle-income countr* OR Developing countr* OR Third world countr* OR Poor countr* OR Developing world OR Africa OR Asia OR Central Asia OR East Europe OR Eastern Europe OR Eastern Bloc Country OR Latin America OR Central America OR South America

Theme of review 1: Generation of additional risk and uncertainty
Risk OR Uncertain* OR Insecurity OR Vulnerab* OR Unprotected OR Gender difference

Theme of review 2: Impact on long-term investment decisions
Invest* OR Household saving OR Household econom*

Theme of review 3: Ability to participate
Social life OR Social living OR Empower* OR Communit* OR Collective OR Social group OR Public life OR Friend OR Voice OR Public forum OR Public fora OR Authorit* OR Responsibilit* OR Trust OR Enabl*

Theme of review 4: Vicious and virtuous circles associated with disease
Poverty OR Trap OR Underdevelop* OR Vicious circle OR Virtuous circle OR Economic impact OR Household economy OR Economic develop* OR Dynamic effect

Theme of review 5: Social networks and social capital for coping with adverse economic and health impacts
Social network OR Social capital OR Cope OR Coping OR Asset OR Sharing OR Means OR Resourc* OR Saving OR Subsist* OR Surviv* OR Handle OR Get by OR Get along

Limits
Term in title or abstract; review article; English language (article or abstract); human; abstract available
## Annex 2. Search results

### Table 1. Search results for bibliographic databases

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<td>24 451</td>
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<td>20 298</td>
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Phase I: Initial hits of terms used individually for the searches A until G.
Phase II: Hits of five themes (C to G) combined with A, B and geographical terms.
Phase III: Hits once limits are applied. For EconLit, limits were not applied as original number of hits was small.
Phase IV: Articles retained after review of title and abstract.
Table 2. Articles found from other keyword searches

<table>
<thead>
<tr>
<th>Motherhood (1) and Least developed country (LDC) (2) term with:</th>
<th>PubMed</th>
<th>IBSS</th>
<th>EconLit</th>
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<tbody>
<tr>
<td></td>
<td>Phase III</td>
<td>Phase IV</td>
<td>Phase III</td>
</tr>
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<td>Coping mechanism</td>
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<td>Poverty trap</td>
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<td>Social network</td>
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<tr>
<td>Empowerment</td>
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<td>5</td>
<td>3</td>
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<tr>
<td>Economic or social investment</td>
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</tr>
<tr>
<td>Labour or work</td>
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<td>na</td>
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<tr>
<td>HIV/AIDS, economic impact and pregnancy or childbirth</td>
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<td>3</td>
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<td><strong>TOTAL</strong></td>
<td><strong>779</strong></td>
<td><strong>35</strong></td>
<td><strong>145</strong></td>
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</tbody>
</table>

(1) Matern*, mother*, pregn*
(2) Using the search terms for developing world regions (see Annex 1)

Table 3. Relevant articles accessed from the global review (1)

<table>
<thead>
<tr>
<th>Database</th>
<th>Title considered relevant</th>
<th>Judged relevant from abstract and obtained</th>
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<td>PubMed</td>
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<tr>
<td>World Bank</td>
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<tr>
<td><strong>TOTAL</strong></td>
<td><strong>5</strong></td>
<td><strong>2</strong></td>
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</table>
Moving towards universal coverage—about the series
This series is a joint product of three Geneva-based WHO Departments: Making Pregnancy Safer; Reproductive Health and Research; and Health Policy, Development and Services. It aims to provide, through peer-reviewed papers, the latest evidence and thinking on key issues that are important for making progress towards the goal of universal coverage for essential health-care interventions. Issues related to the health and coverage of the poor are a special focus of the series, as are the implication of universal coverage for health-care programmes and systems.

Issues in maternal–newborn health and poverty—about the subseries
The global status of maternal and newborn health provides one of the most striking examples of disparity between rich and poor countries. Of the approximately half a million and four million newborn deaths that occur each year, 98%–99% occur in the poorest countries of the world. Little is known about the actual impact and costs of maternal and newborn ill-health and death at the individual, familial and societal level and their effect on poverty. Papers in this subseries address these important issues, providing a synthesis of available evidence and original perspectives for further research and debate, all of which are expected to contribute to the international efforts towards the attainment of the Millennium Development Goals.