

Can maternal depression increase infant risk of illness and growth impairment in developing countries?

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Summary

Despite relative improvement in living conditions and availability of modern healthcare, infant mortality rates continue to be very high in many developing countries. High rates of depression have also been reported in women in these countries. The continuous care and attention of children is a demanding task, and poor physical or mental health in mothers might be expected to have adverse consequences on their children's health, nutrition and psychological well-being. Review of published literature reveals very little research in developing countries on the association between poor mental health in mothers and the subsequent physical well-being of their children. We hypothesize that the level of care provided by mothers with depression may put their infants at higher risk of infection and impaired growth, compared with infants of mothers without depression. We outline approaches to test such a hypothesis in a developing country, and discuss its implications.

Keywords

maternal depression, child health, developing countries

Introduction

Recent reports suggest that, in terms of both disability and death, there is a heavy, but underestimated, global burden of mental disorders (Desjarlais *et al.* 1995; Murray & Lopez 1996). For example, unipolar major depression was ranked fourth in the world league of disabling diseases in 1990 and is expected to be second only to ischaemic heart disease by 2020 (Murray & Lopez 1996). Many studies show that disorders such as depression and anxiety are highly prevalent in developing countries, with reported point prevalence rates of 25% for men to 66% for women in rural Pakistan (Mumford *et al.* 1997).

These common mental disorders (CMD) are two to three times as common in women as in men

(Patel *et al.* 1999) and are particularly common among women of childbearing age (Kumar 1994). Depression can be a debilitating disorder, with symptoms such as depressed mood, tiredness, insomnia, lack of energy, low self-esteem and a lack of interest in the environment. A large body of literature documents the effects of maternal depression on the development of children. Studies have shown that maternal depression adversely affects the child's psychological development (Weinberg & Tronick 1998), intellectual competence (Kaplan *et al.* 1987), psychosocial functioning (Anderson & Hammen 1993) and rate of psychiatric morbidity (Welner & Rice 1988). However, almost all of these studies have been carried out in developed countries, and the outcomes studied in children have usually been psychological rather than physical.

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In our opinion, maternal competence in child care probably plays a greater role in the child's physical well-being and survival chances in developing countries, as the environment is frequently more hostile than in the developed world. Overcrowding, poor sanitation and food insecurity are common, with suboptimal maternal care potentially resulting in a greater risk to the physical health of a child. There is likely to be a particularly high risk during the first year of life, not only because this is a time of increased susceptibility of mothers to a depressive episode (a state that often becomes chronic) but also because it is during this period that the infant requires most care. Unlike a 2-year-old, and certainly a 5-year-old child, who might be able to seek food for themselves, the young infant is completely dependent on their carer to meet their every need. It is, therefore, at this age that deficiencies in care are most likely to manifest in a child's physical well-being.

Evidence linking maternal psychopathology to physical health of infant

Early observational studies by Widdowson (1951) indicated that the emotional quality of child care influenced their growth. Kerr *et al.* (1978) found evidence of poor psychosocial functioning in mothers of malnourished children. These mothers had more chronically disrupted lives, unsupportive partners and fewer social contacts. Many of these mothers were described as 'apathetic' and 'dependant' by the authors. Montgomery *et al.* (1997) studied a 1958 British cohort from the National Child Development Study, and concluded that slow growth in childhood is associated with family conflict and this is independent of socioeconomic circumstances. It is, therefore, widely accepted that an adverse family and social environment can retard physical growth and development. However, the mother's mental state as a risk factor for the child's physical health has so far received little attention. Billings & Moos (1983) found that children of depressed parents had more physical health problems such as allergies, asthma, frequent colds and coughs, headaches and indigestion compared with children of non-depressed parents. Bagedahl-

Strindlund *et al.* (1988) showed that children of mentally ill mothers had higher hospital admissions and mortality rates than controls. In one of the very few studies to be carried out in a developing country, De Miranda *et al.* (1996) studied children in an urban slum in Brazil, and found that mothers of malnourished children showed a higher rate of mental disturbance, as measured by a psychiatric screening instrument, compared with mothers of normal children.

Possible mechanisms linking maternal depression to infant morbidity

There are a number of possible mechanisms that could link maternal depression to physical morbidity in their young children. The first is through the risks that antepartum depression could pose to the unborn infant. In developed countries, it has been shown that depressed women are more likely than non-depressed women to obtain inadequate antenatal care (Milberger *et al.* 1996). This is probably a consequence of social withdrawal and poor problem-solving skills, associated with depression. Studies in developed countries have also found increased rates of premature births and lower birth weight among the infants of depressed vs. non-depressed mothers (Copper *et al.* 1996). In developing countries where antenatal care is more difficult to acquire, depression in mothers could influence the level of care received, increasing the incidence of low birth weight, and subsequent infant morbidity and mortality. Depression is also associated with risk-taking lifestyles such as smoking and unhealthy eating (Milberger *et al.* 1996), which could further increase the risks to the fetus.

The second set of mechanisms involves the direct impact that depressive symptoms have on parenting. Depressed mothers in developed countries have been observed to provide less quantity and poorer quality of stimulation for their infants (Bettes 1988) and to be slower in responding and less responsive to them (Livingood *et al.* 1983; Field *et al.* 1990). Depressed mothers are also more likely to have negative views of themselves as parents (Goodman *et al.* 1993), seeing themselves as having less personal control over their child's development, and less able to positively influence their children

(Kochanska *et al.* 1987). It might, therefore, be expected that in developing countries these symptoms could influence maternal care behaviours, which, in turn, could increase the child's susceptibility to illness. For example, in Thailand, mothers who washed their hands before breastfeeding, gave their child food immediately after cooking, and warmed infant foods before meals, had infants with significantly less diarrhoea compared with those who did not (Thongkrajai *et al.* 1990). This is also true for other care activities of mothers such as breastfeeding practice, preparation of appropriate weaning foods, uptake of immunizations, and care-seeking behaviours when children are ill. It could be expected that depression in mothers could adversely influence these activities.

A third potential mechanism linking maternal depression to physical morbidity in children is through its links with negative life events and chronic psychosocial difficulties. There is evidence that depressed mothers can act in ways that increase the risks that their children will experience adversity. For example, longitudinal research from the USA suggests that the children of depressed mothers are exposed to a much greater number of stressors, such as family discord, than the children of non-depressed mothers (Hammen *et al.* 1987). As mentioned above, psychosocial adversity and family conflict in childhood has been associated with poor growth, particularly stunting, in children.

Testing the hypothesis

Therefore, it is possible that in deprived parts of the developing world, infants of mothers with depression will have a higher rate of morbidity from infection and poorer growth than infants of psychologically well mothers. There are a number of ways to test this hypothesis quantitatively. A case-control study might start with the identification of children with infectious disease and/or poor growth, after which their mothers were assessed for depression. However, this design could not test whether the depressive symptoms in mothers were a *consequence*, rather than *cause*, of the child's illness. It may be better to use a cohort design. This could involve screening mothers for depression in the last trimester of pregnancy. Depressed mothers

and non-depressed controls could then be followed up to assess the physical health of their child. Outcomes could include infectious diseases and growth of the child. The study design would need to take into account important variables that could be associated with both maternal depression and child health, such as poverty, maternal education, birth order, age and gender of the child. In addition, it might include measures of one or more of the possible mediators outlined above.

The use of qualitative methods in health research in developing countries is valuable, and their use in combination with quantitative methods has been emphasized (Yach 1992). These methods could be employed to study variables not easily quantified, some of which will be unique to individual cultures. For example, culture-specific parenting practices (Minde & Nikapota 1993) could modify child morbidity risk with maternal depression. The extended family structure, which is still common in most developing countries, may also afford protection from deficits in maternal caring and coping skills. The presence of a grandmother (Al Awad & Sonuga-Barke 1992) or a supporting father (Garmezy 1985) may be particularly important, though there may be an impact of maternal depression on these relationships, which could, in turn, affect childcare. At the broader community level, gender inequality and the low status of women in certain societies are likely to influence their capacity to elicit care for their infant. The use of focus groups and in-depth interviews on a subsample of depressed mothers and controls could be feasibly applied to explore these areas.

Potential implications

There are several implications that stem from this hypothesis. The first concerns attitudes towards mental illness. There is a widespread lack of awareness of mental health issues in developing countries, and mental illness carries a stigma that hinders treatment-seeking (Rahman *et al.* 1998). Mental health remains low on the agenda of planners and policy-makers in the developing world. If maternal mental health and child physical health were shown to be linked, this could help bring maternal mental health up the healthcare agenda, in

a manner that could be culturally and socially acceptable.

This, however, raises a second, and even more important issue. Even if greater awareness towards mental health issues were achieved, what could be done about it? In the last two decades, significant developments have taken place in the pharmacological and psychosocial treatment of depression. At the same time, the World Health Organization and the international mental health community have devised a number of innovative strategies that have led to the development of quality health services in even some of the poorest countries (World Health Organization 1981; Desjarlais *et al.* 1995). Most approaches employ common principles, calling for services to be decentralized, multisectoral, culturally relevant and sustainable. It has been demonstrated to be possible for primary health care (PHC) workers to recognize depression and treat it appropriately with drugs and counselling. For example, De Jong (1996) has described the development and evaluation of a comprehensive mental health programme in Guinea-Bissau that can be a useful model for other countries. This started with two-stage screening of 351 adults attending primary health care (PHC) facilities consecutively in an urban and rural area, and identifying 12% with psychiatric disturbances. The assessment of the primary care workers' knowledge of mental health revealed that it was very poor. Depression, acute psychosis, functional complaints, psychiatric emergencies and epilepsy were selected as priority disorders for intervention, based on criteria of point prevalence, community concern, seriousness, susceptibility to management, sustainability of the programme and the knowledge and skills of PHC workers. Following training and supervision of 850 primary health care workers, their diagnostic sensitivity for priority disorders increased from 31% to 85%, and 82% of the patients received appropriate treatment. This remarkable programme has been shown to be sustainable over a 10-year period, and shows a viable cost-benefit ratio.

At the same time, epidemiologic and anthropologic data indicate that the origins of such high rates of depression in women can be traced to the social circumstances of their lives. As Desjarlais *et al.* (1995) point out: 'hopelessness, exhaustion, anger

and fear grow out of hunger, overwork, violence and economic dependence. Understanding the sources of ill health for women means understanding how cultural and economic forces interact to undermine their social status. If the goal of improving women's well-being from childhood through old age is to be achieved, *healthy policies* aimed at improving the social status of women are needed along with *health policies* targeting the entire spectrum of women's health needs'. But it is often hard to develop an impetus to change the direction of such well entrenched forces. We believe that linking maternal well-being to child health can provide a universally acceptable 'entry-point' for creating such an impetus, leading to policies aimed at improving the social status of women.

The third issue concerns the effectiveness of child health programmes in developing countries. Preventive strategies such as infant feeding advice, sanitation, immunization, health education and health-seeking behaviours are mostly directed towards the mother. The impact of these programmes is related, therefore, to the functional capacity of this group, their receptivity to the message and uptake of the intervention offered. The mothers' psychological well-being is probably key to the success of these programmes. It might be feasible, for example, to include the assessment of maternal abilities to appropriately institute care (potentially a proxy for mental health), into the World Health Organization's Integrated Management of Childhood Illness strategy. There is already advice to check mothers understanding of home-based interventions and observe her practice but, in the section on maternal health, mental state is not addressed (Child and Adolescent Health and Development Division 1998). Health workers could be taught simple mental health techniques to engage with these mothers, provide counselling, practical help and advice on child health in a more effective way.

Finally, we believe such studies may help the building of bridges between disciplines in health-care. All too often, research is too narrowly focused, with mental health professionals concentrating their efforts on strategies for mental health care provision, and child health professionals on strategies for reducing child morbidity and mortality.

Studies in this area would derive their theoretical framework from many disciplines including paediatrics, psychiatry, primary care, sociology, public health, epidemiology and medical anthropology. We feel such a multidisciplinary and holistic approach to health care will be more likely to succeed than a narrowly focused one.

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