

Maternal Depression and Child Health: The Need for Holistic Health Policies in Developing Countries

Atif Rahman, PhD, MRes, MRCPsych

In recent years, much focus has been placed on maternal and child health. The World Health Organization's theme for this year's World Health Report is healthy mothers and children. Maternal and child health also figure prominently in the Millennium Development Goals (MDGs), through which significant gains are expected from developing countries by the year 2015 in areas such as infant malnutrition and mortality, maternal health, poverty, and the perpetuating cycle of female gender disadvantage. While the physical health of women and children is emphasized in international policy guidelines, the mental dimensions of their health are often ignored in developing countries' domestic policy. However, recent evidence strongly suggests that the mental and physical health of mothers and children are inextricably linked and that the one cannot possibly be achieved without the other. This paper reviews current evidence and suggests directions for policy and re-

search in this area.

Maternal Depression in Developing Countries

Depression is a debilitating disorder, with symptoms such as depressed mood, tiredness, insomnia, lack of energy, low self-esteem, and a lack of interest in one's environment. It is the fourth leading cause of disease burden and the largest cause of non-fatal burden of disease, accounting for almost 12% of all total years lived with disability worldwide. Depression around childbirth is common, affecting approximately 10-15% of all mothers in Western societies. Likewise, epidemiological studies have reported increasingly high rates of postnatal depression in diverse cultures across the developing world. An early study pioneered by Cox in a semi-rural Ugandan tribe found that 10% of women were affected by postnatal depression.¹ Two de-

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Atif Rahman, PhD, MRes, MRCPsych, is a Wellcome Trust Research Career Development Fellow in Tropical Medicine at the University of Manchester, UK and visiting professor of psychiatry at the Institute of Psychiatry, Rawalpindi, Pakistan. He has investigated the impact of maternal depression on infant development and is currently developing culturally appropriate psychological interventions for low-income populations.

acades later, a community study by Cooper et al. in a peri-urban settlement in South Africa found rates of 34.7%, an increase of over three-fold.² Hospital-based studies have found rates of 23% in Goa, India; 22% in eastern Turkey; and 15.8% in Dubai, United Arab Emirates.³⁻⁵ A rural-community study in Rawalpindi, Pakistan, reported that over 25% of women suffer from depression in the antenatal period and 28% in the postnatal period.⁶ Over half of these women were found to be still depressed a year later. Risk factors identified include previous psychiatric problems, major life events in the previous year, a poor marital relationship, a lack of social support, and economic deprivation. In addition, certain factors seem to be specific to different cultures. For example, female infant gender was found to be an important determinant of postnatal depression in India but not in South Africa. Importantly, postnatal depression was found to be associated with high degrees of chronicity, as demonstrated by the data from Pakistan. Women with chronic depression had higher levels of disability (as measured by difficulties in carrying out everyday activities such as cooking, cleaning, and domestic chores) and more disturbances of mother-infant relationship.

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

Because of its physical and mental effects, depression is an extremely disabling disorder. Patel and colleagues found that postnatally-depressed mothers scored sig-

nificantly higher on the Brief Disability Questionnaire (an eight-item questionnaire that rates current problems in carrying out daily activities), spending about twice the number of days in the previous 30 days than non-depressed mothers unable to complete their daily activities.³ Maternal competence in child care is likely to play an even 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 sub-optimal maternal care potentially resulting in a greater detriment 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 which often becomes chronic), but also because it is during this period that the infant requires the most care. Unlike a two year-old or a five year-old child, who might be able to seek food for himself, an infant is completely dependent on his care-giver to meet his every need. It is therefore at this point in the child's development that deficiencies in care are most likely to impact physical well being.

In addition, there exists a comprehensive literature documenting the effects of maternal depression on the psychological development of children. Four decades ago, Michael Rutter highlighted risks to the development of children of parents with a psychiatric disorder in a seminal monograph.⁷ Since then, studies have shown that maternal depression adversely effects a child's psychological development, intellectual competence, psychosocial function-

ing, and rate of psychiatric morbidity.⁸⁻¹¹ The ongoing Avon Longitudinal Study of Parents and Children in south-western United Kingdom also provides evidence that antenatal stress and postnatal depression in mothers lead to behavioral and emotional problems in their children.^{12,13} 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.

In addition, a second line of investigation has examined the quality of emotional care and the psychosocial environment of the infant and has demonstrated an association between infant growth and wellbeing. Early observational studies by Widdowson in German orphanages indicated that the emotional quality of childcare influenced orphans' growth.¹⁴ In Kingston, Jamaica, Kerr et al. found evidence of poor psychosocial functioning in mothers of malnourished children.¹⁵ 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. O'Callaghan and Hull compared 40 Caucasian children, aged between three months and three years, whose weights were below the third percentile, with 34 children from a similar background whose weights were between the 25th and 75th percentile.¹⁶ In 23 out of the 40 malnourished children, organic illness was considered to be insufficient to explain the child's underweight. Three factors occurred more frequently in the malnourished group. Mothers perceived themselves as having disturbed mood and used the word "depression" to describe these feelings. They also tended to

come from lower social classes than mothers in the comparison group, and their infants had lower birth weights. While it is to be expected that infants with low birth weight would have greater chances of being underweight later in life, it is notable that women who are prenatally depressed give birth to babies with lower birth weight than normal mothers.¹⁷ Montgomery, Bartley, and Wilkinson studied a 1958 British cohort from the National Child Development Study and concluded that slow growth in childhood is associated with family conflict and that this is independent of socio-economic circumstances.¹⁸ It is therefore widely accepted that an adverse family and social environment can retard children's physical growth and development.

Despite these findings, maternal depression as a risk factor for the child's physical health has so far received little attention, especially in developing countries, where the parameters of infant health are dismally poor.

Recent evidence from south Asian studies

Two south Asian countries, Pakistan and India, have very high rates of maternal depression, and almost half the population under five years of age suffers from malnutrition, in spite of food sufficiency achieved by these countries. The region thus provides an ideal setting to examine the question of the impact of maternal depression on child health, and a number of studies have been conducted in the last five years. In Goa, India, Patel and colleagues carried out a hospital-based cohort study of mothers who had been diagnosed with

postnatal depression at 6-8 weeks after birth.¹⁹ Their infants were weighed and measured at six months of age. Infants of mothers with depression had a relative risk of about 2 (95% CI 1.1-4.7) for being underweight and of about 3 (95% CI 1.3-6.8) for being short for their age. These associations remained statistically significant after adjustment for other variables influencing growth, such as birth weight and exclusive breast-feeding.

In Rawalpindi, Pakistan, a case-control study of healthy and age-matched infants brought to an immunization clinic for their eight-month measles vaccination investigated mothers of eighty-two malnourished and ninety well-nourished infants.²⁰ The mothers were administered the self-reporting questionnaire (SRQ-20), a psychiatric screening instrument. Mental distress determined by WHO SRQ-20 was associated with an increased risk of under-nutrition in infants (odds ratio 3.9, 95% CI 1.95 – 7.86). The association remained significant after adjustment for birth weight, economic status, maternal age and literacy, sex of infant, and family structure.

In a community based case-control study of risk factors for malnutrition in children aged 6-12 months in Tamil Nadu, India, the odds ratio for post-partum depression was 7.4 ($p=0.01$).²¹ This association remained significant after adjustment for maternal education, birth weight, breast-feeding, immunization and economic status.

Further strong evidence of the link between maternal depression and infant outcomes is provided by a one-year prospective cohort study of 320 mothers and their infants in Rawalpindi, Pakistan.²² It showed that infants of antenatally de-

pressed mothers had poorer growth than controls. The relative risk for being underweight (weight-for-age z-score $<-2SD$) was 4.0 (95% CI 2.1-7.7) at 6 months and 2.6 (95% CI 1.7-4.1) at 12 months, while the risks for stunting (length-for-age z-score $<-2SD$) was 4.4 (95% CI 1.7-11.4) at 6 months and 2.5 (95% CI 1.6-4.0) at 12 months. Chronic depression (depression persisting for over a year) carried a greater risk for poor outcome than episodic depression. The associations remain significant after adjustment for confounders by multivariate analyses. The data suggests that the population-attributable risk of stunting at the age of one year, that is, the proportion by which the incidence of infant stunting would be reduced if maternal depression were eliminated from the population, is 30 percent. Infants of depressed mothers also have lower birth weight, higher rates of diarrhoea, and are less likely to be immunized. Thus, maternal depression is potentially a major contributor to poor infant growth outcomes and morbidity in less resourced countries.

Mechanisms Linking Maternal Depression to Infant Morbidity

There are a number of mechanisms that might link maternal depression to physical morbidity in young children. The first is through the risks that antenatal depression could pose to the unborn infant. In developed countries, it has been found that depressed women are more likely than non-depressed women to obtain inadequate antenatal care.²³ This is likely to

be 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 versus non-depressed mothers.²³⁻²⁵ In developing countries, where antenatal care is more difficult to acquire, depression in mothers can influence the level of care received, increasing the incidence of low birth weight and subsequent infant morbidity and mortality. Depression is also associated with riskier lifestyles such as smoking and unhealthy eating, which increase risk to the foetus.²⁶

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 and to be slower in responding and generally less attentive to them.²⁷⁻²⁹ Depressed mothers are also more likely to have negative views of themselves as parents, seeing themselves as having less personal control over their child's development and less able to positively influence their children.^{30,31} This may affect the way that these mothers cope with adversity, such as poor infant health, and might therefore be expected to influence maternal care behaviors, which in turn increase the child's susceptibility to illness. For example, in Thailand, mothers who washed their hands before breast-feeding, gave their child food immediately after cooking, and warmed infant foods before meals had infants with significantly less diarrhoea compared to those who did not.³² This holds true for other maternal care activities, such as breast-feeding practice, preparation of appropriate weaning

foods, uptake of immunizations, and treatment-seeking behaviors when children are ill. Depression in mothers adversely influences these activities.

Maternal depression is further linked to physical morbidity in children through its correlations with negative life events and chronic psychosocial difficulties. There is evidence that depressed mothers may act in ways that increase the probability 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.³³ As mentioned above, psychosocial adversity and family conflict in childhood has been associated with poor growth, particularly stunting, in children.

There are likely to be complex interactions between factors in the child's social, economic, and home environments and between mother and child. While the interaction between these factors may be more important than any one individual risk factor, poor maternal mental health may be a common denominator and thus an important indicator, as well as a mechanism, of risk to the child. Furthermore, depression is a treatable disorder, and, therefore, its possible association with poor child health assumes even greater public health implications, as potential intervention strategies could have a bearing on health outcomes of both mother and child.

Further Exploratory Research

Further epidemiological and anthropo-

logical studies can help identify important moderators, many of which may be culture-specific. Women's status in society, their own and society's perceptions of their role in childcare, and the inter-relationship of their mental and physical health are important areas for further study. The gradual erosion of the traditional extended family and its impact on childcare practices, family support, and maternal psychological state in societies undergoing rapid transition require more complete understanding.

Such studies also need to explore the mediating effects of mother-infant interactions in malnourished infants of depressed mothers. High maternal responsiveness to a child's needs for food and comfort may have a direct bearing its growth, while increased stimulation may improve the child's exploratory behavior, levels of physical activity, and improved general health. It also needs to be considered that mother-infant interactions are two-way. Thus, the child's innate temperament may influence maternal mood and behavior in ways that affect the nutritional outcome in the infant.

The important mediating effects of feeding behavior in maternal depression have not been sufficiently investigated. There may be differences between depressed and non-depressed mothers in the duration of breast-feeding and the timing of introduction of solid food. Similarly, the manner of preparation of the infant's food, its storage, and its dispensation may differ between the two groups. The educational status of the mother and the presence of other skilled family members may modify this effect, and this needs further study.

Development and Evaluation of Interventions

Interventions aimed at promoting the mental health of mothers and therefore also improving the physical well-being and psychological development of their offspring have considerable potential. A number of individual and group interventions targeting maternal depression have been developed and tested, mostly in developed countries. Treatment trials have shown that nondirective counselling by health visitors, dynamic psychotherapy, cognitive behavior counselling and antidepressants are all equally effective.³⁴⁻³⁶ A psychosocial intervention that provided the mother with emotional support and encouraged her in sensitive response interactions with her infant in a disadvantaged South African population found no impact on maternal mood but significant improvements in mother-infant relationship.³⁷

Group-based approaches have usually been used to improve outcomes in children through parent-training programs. A meta-analysis of such programs shows that these can also be effective in improving psychosocial and mental health of the mothers.³⁸

However, a number of health system and cultural differences make it difficult for mental health interventions to be extrapolated from the developed to the developing world.³⁹ Treatments are unlikely to be adopted by professionals and policy makers unless they are shown to be efficacious, cost-effective, able to be easily integrated in existing community health services and applicable to other health problems per-

ceived to be of higher priority. Multimodal or combined interventions are most likely to fit these criteria. For example, a multimodal intervention for depressed mothers might include support for the mother, nutritional and practical child-care knowledge and responsive parenting techniques, all delivered in a psychologically therapeutic manner. These multimodal interventions often have relatively small delivery costs, less duplication of services and more appropriate identification of those who are most likely to benefit; in addition, families are more likely to be motivated to seek such services where outcomes such as infant growth are perceived to be more tangible.⁴⁰

We have developed a psychosocial intervention along these lines for depressed mothers and their infants living in rural Pakistan. Called the ‘Thinking Healthy Programme’ (THP), it is based on our findings that maternal depression probably affects infant development and growth through multiple processes. Disability due to depressive symptoms (such as fatigue, poor concentration, loss of interest) is likely to affect child-care abilities directly, while impaired social functioning is likely to have indirect consequences through lack of support in childcare. Disturbances in mother-infant relationship in depressed mothers negatively influence the infant’s development. THP is designed to target these processes and includes a supportive component (non-directive empathic listening), an educational component (nutritional and healthcare advice, delivered within a cognitive-behavior framework) and a mother-infant relationship component (warmth, attentive listening, stimulation, and support for exploration and au-

tonomy for the infant). The objective is to help mothers feel supported, empowered, and confident about their parenting abilities, and, through this process, to positively influence their mood. Rather than employing the directive approach of the medical model, health workers are trained to adopt a more patient-centered approach, tailoring the three components according to the individual needs of the patient. THP is currently being evaluated through a cluster randomized trial in Rawalpindi.

Randomized control trials to test such interventions can also provide information on moderators and mediators of treatment outcomes.⁴¹ Treatment moderators specify for whom or under what circumstances the treatment is effective. They also suggest to public health professionals which at-risk groups might be most responsive to intervention and for which groups other, more appropriate, treatments might be sought. Moderators may also identify subpopulations with possibly different causal mechanisms or courses of illness.

Treatment mediators identify possible mechanisms through which a treatment might best achieve its effects. Thus, in testing a multimodal intervention, both health-seeking behavior and mother-infant interaction could be studied for change with intervention. The mediator that shows the most change in relation to improved outcome could help determine the focus of future interventions.

Implications for Child Health Policy

Traditionally, child health programs have focused on short term, disease-specific,

technologically dependant strategies aimed at achieving a high rate of success in a relatively short time.⁴² An example is the successful smallpox eradication program. Subsequently, however, the limited success of ambitious programs such as the malaria eradication program launched in the 1950s and abandoned in the 1970s has led to a change in strategy towards more people-centered, rather than disease-specific, programs of health care. New initiatives launched under this strategy were more primary care and community based. Many of these programs include provisions such as universal services for maternal and child health, family planning, and improved sanitation and water supplies, with the emphasis shifting from clinic-based curative interventions to prevention through a multi-sectoral approach and community involvement. However, these strategies are not mutually exclusive, and recent programs such as the Integrated Management of Childhood Illnesses (IMCI) initiative⁴³ combine many aspects of both. The IMCI program focuses on under-nutrition, diarrhoea, and acute respiratory infections as the most important contributors to increased child mortality; it also incorporates community participation and development of health systems combined with medical technology as the major approach towards their eradication.

As child health strategies evolve, focus is increasingly turning to the household as a center of child health activity. As Claeson and Waldman state:

“In all cases, further improvements (in child health gains) will depend to a large extent on what happens in the household and community and

to what extent the health system is responsive and will play a supportive part. The promotion of a limited set of household behaviors that have a direct link to the prevention and cure of common childhood illnesses needs to become the centerpiece of intensified activity.”⁴²

These household behaviors, such as infant feeding practices, immunization, home-health, and care-seeking practices rely heavily on the mother, who is the primary care-provider in most developing countries. Implicit, therefore, in this approach to achieving good health outcomes in children is the recognition that this will need to depend not only on interventions in childhood, but also on the psychological health and receptivity of the mother.

One way to conceptualize the critical role of maternal depression in child survival is to see it as both a marker and a mechanism for poor infant health. This has implications for prevention as well as intervention. As a marker, depression can be identified with relative ease, using simple checklists that have excellent validity. The use of these instruments can help identify a group of mothers whose infants are at greater risk of poor health. Resources can then be targeted at this group. It might be feasible, for example, to include an assessment of maternal mental health in the World Health Organization's Integrated Management of Childhood Illness strategy. There is already advice to check the mother's understanding of home based interventions and observe her practice, but in the section on maternal health, mental state is not addressed.⁴³ Health workers could be taught simple mental health tech-

niques to engage with these mothers and provide counselling, practical help, and advice on child health in a more effective way. Encouragement of positive mother-infant interaction with infants in depressed mothers is likely to benefit not only the infant's physical, but also his psychological and cognitive, development. The Thinking Healthy Programme described above utilizes this approach.

Implications for Women's Health Policy

There is a widespread lack of awareness of mental health issues in developing countries, and mental illness carries a stigma that hinders treatment seeking.⁴⁴ 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 might help elevate maternal mental health on the healthcare agenda in a manner that would be culturally and socially acceptable.

Even if greater awareness about 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.^{45,46} Most approaches employ common principles, calling for services to be decentralized, multi-sectoral, culturally relevant and sustainable.

For example, Pakistan has developed a successful community mental health program based on these principles.⁴⁷ It has been demonstrated to be possible for primary health physicians to diagnose depression and treat it appropriately with drugs and counselling. It has also been found that local community-based health workers, after receiving training, can recognize and effectively manage common mental disorders in the community. A key component of the program is successful collaboration with existing community institutions, such as schools, to increase awareness of mental health issues.⁴⁴ There is considerable potential for integrating mother and infant health programs into such programs. As mentioned above, highlighting the benefits to the infant's physical health could be a strong "selling point" for policy makers to divert resources to such services, which could directly benefit women's mental health.

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 and colleagues 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 need-

ed along with health policies targeting the entire spectrum of women's health needs."⁴⁶

Unfortunately, it is often hard to develop an impetus to change the direction of such culturally well-entrenched forces that undermine women's status. Once again, linking maternal well-being to child health can provide a universally acceptable 'window of opportunity' for creating such an impetus, leading to policies aimed at uplifting the social status of women, and in the process, improving their and their children's physical and mental well-being.

The association between maternal depression and child health can also help the building of bridges between disciplines in health care. Health policy and research are often narrowly focused: mental health professionals concentrate on strategies for mental healthcare provision, while child health professionals are concerned with strategies for reducing child morbidity and mortality. Interventions such as the Thinking Healthy Programme, by necessity, derive their theoretical and practical framework from many disciplines, including pediatrics, psychiatry, primary care, sociology, public health, epidemiology, and health psychology. Such a multidisciplinary and holistic approach to health care is more likely to succeed than a narrowly focused one. 

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