

Maternal Depression: A Global Threat to Children's Health, Development, and Behavior and to Human Rights

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ABSTRACT—*Depressive disorders are a common source of disability among women. In addition to the economic and human costs of maternal depression, children of depressed mothers are at risk for health, developmental, and behavioral problems. Although most of the research examining the evidence and intergenerational aspects of maternal depression has been conducted in high-income countries, recent evidence suggests that rates of maternal depression may be higher in low- and middle-income countries, where nearly 90% of the world's children live. This review examines the evidence from low- and middle-income countries that links maternal depression with children's health, development, and behavior. We present recommendations for future policies and intervention programs related to maternal depression and examine how maternal depression affects the rights of millions of children living in these countries.*

KEYWORDS—*maternal depression; child; low-income countries; development*

Depressive disorders are common (Lepine, 2001), chronic (Pincus & Pettit, 2001), and a principal source of disability throughout the world, especially among women (Moussavi et al., 2007). Research from high-income countries¹ has documented that the economic and human costs of maternal depression are particularly insidious because they extend to the next generation, affecting children's health, development, and behavior. The symptoms that characterize maternal depression, including sadness, negative affect, loss of interest in daily activities, fatigue,

difficulty thinking clearly, and bouts of withdrawal and intrusiveness may interfere with consistent, attentive, and responsive caregiving, thereby disrupting effective parenting (Paulson, Dauber, & Leiferman, 2006). Infants are particularly vulnerable because they depend on their mothers for the primary interactions that form the basis of healthy attachment and timely acquisition of developmental skills (Coyl, Roggman, & Newland, 2002).

We focus on the nature and consequences of maternal depression in low- and middle-income countries, where the majority of the world's children live. We examine whether the same intergenerational association between maternal depression and children's health, development, and behavior described in high-income countries exists in low- and middle-income countries. We also make recommendations for policies and intervention programs and examine how international children's rights policies are related to maternal depression. Given recent reviews on maternal depression in high-income countries (Flynn, 2005; Nylén, Moran, Franklin, & O'Hara, 2006; Sohr-Preston & Scaramella, 2006), our review of evidence from high-income countries is illustrative rather than systematic.

MATERNAL DEPRESSION IN HIGH-INCOME COUNTRIES

Studies from high-income countries have reported associations between maternal depression and disturbances in mother-child interactions (Lovejoy, Graczyk, O'Hare, & Neuman, 2000), negative perceptions of infant behavior (Foreman &

Henshaw, 2002), and an increased likelihood of infants being perceived as temperamentally “difficult” (Edhborg, Seimyr, Lundh, & Widstrom, 2000). Both maternal depression (Murray, Stanley, Hooper, King, & Fiori-Cowley, 1996) and negative mother–infant interactions can be exacerbated when depressed mothers perceive their infants as temperamentally difficult (Hart, Field, & Roitfarb, 1999). Negativity and low caregiver responsiveness may contribute to high rates of insecure attachment found among infants of depressed mothers (Martins & Garffan, 2000). Children of depressed mothers are also at risk for slower cognitive development (Sohr-Preston & Scaramella, 2006), low activity, difficulty interacting with unfamiliar adults, and unresponsiveness (Radke-Yarrow, 1998). Biomedical consequences include an increased risk for breastfeeding problems (Cooper, Murray, & Stein, 1993), eating and sleep disturbances (Righetti-Veltema, Conne-Perreard, Bousquet, & Manzano, 2002), and a reduced likelihood of receiving preventative health care (Minkovitz et al., 2005) or daily vitamin supplementation (Leiberman, 2002).

The chronic and “infectious” nature of maternal depression creates long-term risks. Prenatal maternal depression increases the risk for postpartum depression (Dennis, Janssen, & Singer, 2004), and postpartum depression increases the risk for chronic depression (Murray, Sinclair, Cooper, Ducournau, & Turner, 1999). Children of depressed mothers are at risk for behavioral problems throughout childhood, including symptoms of depression (Goodman & Gotlib, 1999; Murray et al., 1999; Radke-Yarrow, 1998). Maternal depression also increases the risk of paternal depression (Goodman, 2004), which can also increase the risk of offsprings’ social and behavioral problems (Ramchandani, Stein, Evans, O’Connor, and the ALSPAC Study Team, 2005).

Depression can harm mothers and children in many ways. Offspring of depressed mothers may inherit maternal genes that predispose them to increased risk for depression or developmental problems (Goodman & Gotlib, 1999). However, maternal depression is also related to differences in children’s functioning through nongenetic mechanisms (Petterson & Albers, 2001). For example, chronically depressed mothers are less sensitive in interactions with their children than nondepressed mothers, thus undermining children’s attachment security (Campbell et al., 2004). In addition, high levels of family stress may mediate the link between maternal depression and adverse childhood behavior (Dawson et al., 2003), or family stress may increase the risk of maternal depression, leading to negative mother–infant interactions, which increases the risk of insecure infant attachment (Coyle et al., 2002). Alternatively, protective factors such as higher education levels can attenuate the impact of maternal depression (van Doesum, Hosman, Riksen-Walraven, & Hoefnagels, 2007).

In high-income countries, treatment for maternal depression commonly includes antidepressant drugs, often combined with psychological interventions (American Psychiatric Association, 2000; O’Hara, Stuart, Gorman, & Wenzel, 2000; Verduyn,

Barrowclough, Roberts, Tarrier, & Harrington, 2003). Providing social support can also reduce the risk of subsequent maternal depression (Dennis & Creedy, 2004). Although maternal depression can be successfully treated, residual consequences to mother–child interactions or children’s cognitive and social-emotional development often persist (Forman et al., 2007; Nylen et al., 2006). Treatment programs that include mother–infant interactions have reported gains in both the quality of mother–infant interactions and child functioning (Nylen et al., 2006; Toth, Rogosch, Manly, & Cicchetti, 2006).

MATERNAL DEPRESSION IN LOW- AND MIDDLE-INCOME COUNTRIES

Although nearly 90% of the world’s children live in low- and middle-income countries (United Nations Children’s Fund [UNICEF], 2004), we know little about the prevalence of maternal depression (Patel, Araya, & Bolton, 2004; Simon, Fleck, Lucas, & Bushnell, 2004) or the consequences on children’s health, development, and behavior in these countries (Rahman, Harrington, & Bunn, 2002). However, recent evidence suggests that maternal depression is relatively common and represents a major developmental risk (Walker et al., 2007).

Prevalence and Risk Factors Associated With Maternal Depression

The prevalence of maternal depression in low- and middle-income countries is estimated at 15%–28% in Africa and Asia (Husain, Creed, & Tomenson, 2000), 28%–57% in Pakistan (Kazi et al., 2006), and 35%–50% in Latin America (Wolf, DeAndraca, & Lozoff, 2002). Although genetic predisposition or neurochemical imbalances significantly contribute to the causes of depression (Dawson et al., 2003), there are other risk factors (Lesch, 2004). The relatively high prevalence of maternal depression in low- and middle-income countries may be related to women’s exposure to multiple depression-related risk factors (Broadhead & Abas, 1998), including conflict, disasters, violence, migration, and a high prevalence of HIV/AIDS (Dhanda & Narayan, 2007; Stein et al., 2005). For example, in the relatively impoverished state of Bihar in India, only 45% of married women participate in household decisions and 58% report spousal violence (International Institute for Population Sciences, 2007).

Table 1 shows a summary of depression-related risk factors. Although poverty and economic stress are associated with maternal depression in both high-income (Murray, 1997; Petterson & Albers, 2001) and low- and middle-income countries (Table 1), rates of poverty and economic stress are much higher in low- and middle-income countries (UNICEF, 2004). The initial consequences of poverty in low- and middle-income countries are compounded by the lost work capacity and treatment costs of maternal depression, which add to economic stress (Patel, Chisholm, Kirkwood, & Mabey, 2007). Economic stress also may increase the risk of domestic violence, which has

Table 1
Depression-Related Risk Factors for Women in Low- and Middle-Income Countries

Risk factors	Supporting references
Poverty or high levels of economic stress	Ahmad and Khan (2005); Husain et al. (2000); Mirza and Jenkins (2004); Patel, Kirkwood, Pednek, Weiss, and Mabey (2006); Rahman and Creed (2007); Rahman, Iqbal, and Harrington (2003)
Low social support	Kazi et al. (2006); Lee, Yip, Alexander, Leung, and Chung (2004); Mirza and Jenkins (2004); Rahman and Creed (2007); Rahman et al. (2003); Rodrigues, Patel, Jaswal, and de Souza (2003); Tomlinson, Swartz, Cooper, and Molteno (2004)
Domestic violence	Fischbach and Herbert (1997)
Chronic maternal illness	Moussavi et al. (2007)
Maternal anemia	Beard et al. (2005); Corwin, Murray-Kolb, and Beard (2003)
Lack of awareness by primary health care workers that depression is a medical-mental health problem	Kirkmayer (2001); Rodrigues et al. (2003)
Depression not identified or diagnosed by primary health care workers	Araya, Wynn, Leonard, and Lewis (1994); Araya et al. (2001)
Social stigma associated with a family member being diagnosed with a mental illness	Rahman et al. (1998)
Families with large numbers of children (four or more), especially when children are below 7 years of age	Husain et al. (2000); Rahman and Creed (2007); Rahman et al. (2003)
Having a preterm infant or an infant with low birth weight	Madu & Roos (2006)
Having a child with developmental disabilities	Azar and Badr (2006)
Having an unplanned or unwanted infant	Tomlinson et al. (2004)
Female child in a culture where there is a strong preference for male children	Ahmad and Khan (2005); Patel et al. (2002)
Lack of participation in family financial decisions and lack of control over resources or reproductive health	Rahman et al. (2003)

been linked to maternal depression. Many factors that contribute to maternal depression are common in low- and middle-income countries, including maternal iron-deficiency anemia (Stoltzfus, Mullany, & Black, 2005), large family size (UNICEF, 2004), and low birth weight (Walker et al., 2007).

As also shown in Table 1, there are culture-related risks for maternal depression. In cultures where there is a strong gender preference for boys, the birth of a girl may increase the risk of maternal depression. In other cultures, women have little control or input into family financial decisions, which can increase their risk for depression.

Maternal depression in low- and middle-income countries may also reflect the absence of protective factors that can buffer against depression. For example, although better educated women are less likely to be depressed than poorly educated women (Husain et al., 2000; Kazi et al., 2006; Mirza & Jenkins, 2004; Patel, Rodrigues, & DeSouza, 2002), gender gaps in secondary education are characteristic in many low- and middle-income countries (UNICEF, 2004).

Consequences of Maternal Depression

Table 2 shows that many of the adverse consequences found for children of depressed mothers in high-income countries also occur in low- and middle-income countries, including difficult

temperament, behavior problems, and deficits in cognitive performance and academic achievement. Health consequences include poor physical growth and an increased risk of gastrointestinal illness. In addition, in low- and middle-income countries, maternal depression also increases the risk for paternal depression (Pinheiro et al., 2006).

Similar to reports from high-income countries, reduced responsive and stimulating child care can result in adverse psychosocial consequences for children of depressed mothers (Cooper et al., 1999; Salt, Galler, & Ramsey, 1988). For example, maternal childrearing behaviors mediate the relation between maternal depression and insecure infant attachment in low-income families in South Africa (Tomlinson, Cooper, & Murray, 2005). Depressed mothers are more likely to terminate weaning early due to breastfeeding problems, which may result in adverse health consequences and malnutrition. Underlying both psychosocial and biological consequences is the likelihood that symptoms of maternal depression are chronic (Rahman & Creed, 2007).

Consistent with research from high-income countries, the risks associated with maternal depression interact in a synergistic fashion. For example, a recent investigation from rural Bangladesh demonstrated that when maternal depressive symptoms occurred in conjunction with perceptions of infant

Table 2
Consequences to Children of Depressed Mothers Living in Low- and Middle-Income Countries

Consequences	Supporting references
Child perceived as having a difficult temperament	Galler, Harrison, Ramsey, Butler, and Forde (2004)
Behavior problems	Josefsson and Sydsjo (2007)
Childhood depression	Galler, Harrison, Ramsey, Forde, and Butler (2000); Patel, DeSouza, and Rodrigues (2003)
Cognitive delay	Black et al. (2007); Galler et al. (2000); Patel et al. (2003)
Motor delay	Black et al. (2007)
Low academic achievement	Galler et al. (2004b); Salt et al. (1988)
Undernutrition, stunting, or diarrhea	Rahman, Iqbal, Bunn, Lovel, and Harrington (2004); Rahman, Lovel, Bunn, Iqbal, and Harrington (2004); Rahman, Bunn, Lovel, and Creed (2007)
Problems in breastfeeding	Falceto, Giugliani, and Fernandes (2004); Galler, Harrison, Ramsey, Chawla, and Taylor (2006); Patel et al. (2002)

irritability, infants acquired fewer cognitive, motor, and behavioral skills than when mothers had neither or only one condition (Black et al., 2007). The relation between maternal depressive symptoms, perceived infant irritability, and infant cognitive skills was partially mediated by parental responsiveness and opportunities for play in the home, suggesting that caregiving behavior is influenced by both depressive symptoms and perceptions of infant temperament.

Identification Programs

Brief screening methods have been effective in identifying women with depressive symptoms in both high-income (Arroll, Khin, & Kerse, 2003) and low- and middle-income countries (Ahmad & Khan, 2005; Fuggle, Glover, Khan, & Haydon, 2002; Vega-Dienstmaier, Mazzotto, & Campos, 2002). However, utilization of screening is low and many women with depression are not identified. In low- and middle-income countries, women are generally treated by primary health care workers who may have limited training in the recognition and treatment of depression, little awareness of the serious nature of maternal depression, a heavy patient load, and few resources (Araya et al., 2003; Wang et al., 2007). There is a critical need for frontline staff to be trained to identify mental health problems and to distinguish mental health disorders from daily stresses (Araya, Lewis, Rojas, & Mann, 2001). Such training need not be restricted to primary health care workers. A study in rural Pakistan showed that secondary school children who received a 4-month mental health module had a better understanding of mental health and were more able to recognize depression than

children who did not receive training (Rahman, Mubbashar, Gater, & Goldberg, 1998). Benefits extended to family members who were not directly exposed to information in the module.

Treatment

Although identification of depression without effective treatment raises ethical concerns, and untreated depression is likely to become chronic, many women with depression in low- and middle-income countries receive no treatment. Antidepressant drugs used in high-income countries are effective in low- and middle-income countries (Patel, Araya, Chatterjee, et al., 2007; Rahman et al., 2002), but antidepressants are infrequently used because of the lack of psychiatrists (Patel et al., 2004), high cost of medications (Bolton et al., 2003; Saxena, Thornicroft, Knapp, & Whiteford, 2007), and low rates of patient adherence (Kirkmayer, 2001). However, psychosocial interventions have been used successfully in low- and middle-income countries (Patel, Araya, Chatterjee, et al., 2007). Table 3 shows some examples of successful interventions that build on influences related to maternal depression or on existing health structures.

Treatment approaches based on increasing social support or on enhancing mother–infant interactions have proven effective. The cultural value of group as opposed to individual intervention (Patel et al., 2004) has led to group therapy treatments. However, there is a critical need in low- and middle-income countries for trained mental health personnel to carry out such interventions (Saxena et al., 2007), and reliance on one treatment type may be insufficient (American Psychiatric Association, 2000; Nylén et al., 2006). An appropriate model for use in low- and middle-income countries begins with alleviation of environmental stressors, follows with psychosocial interventions, and progresses to drug treatments for women who do not respond and require more intensive intervention (Araya et al., 2003).

Other cost-effective approaches rooted in child development research have the potential to reduce maternal depression. Interventions designed to promote school attendance by females may reduce the risk of both maternal depression and the intergenerational transmission of depression and poverty. Alternatively, findings from high-income countries indicate that infant massage may help mothers recognize their infant's signals of pleasure and discomfort and reduce the negative consequences of depression for both mothers and infants (Glover, Onozama, & Hodgkinson, 2002). Future research in low-income countries should use mother–infant interactions as a focus of treatment.

MATERNAL DEPRESSION AND CHILDREN'S RIGHTS

From a global perspective, maternal depression compromises families' economic productivity, children's development, and principles of social justice. A recent series of articles highlighted the lack of attention to mental health in the global health

Table 3***Psychosocial Approaches to Treatment of Maternal Depression Validated in Low- and Middle-Income Countries***

Strategy	Evidence
Social support for depressed mothers or mothers at risk of depression	Taiwan: Four weekly support groups led by nurses for depressed mothers of 6- to 10-month-old infants led to significant reduction in maternal depressive symptoms (Chen, Tseng, Chou, & Wang, 2000). Pakistan: Community women were given brief training in providing weekly social support based counseling for 8 weeks to depressed women. Treatment resulted in a significant reduction in depressive symptoms (Ali et al., 2003)
Group therapy	Uganda: Time-limited group therapy focused on promoting interpersonal relations (a strong cultural value in Uganda), using group leaders who had received 2 weeks of training, led to a significant reduction in depressive symptoms (Bolton et al., 2003)
Use of existing health mechanisms	Jamaica: Community health workers visited homes of mothers weekly for a year. Parenting issues were discussed, and mothers were shown play activities for their children. Mothers who had at least 25 visits were significantly less likely to develop depressive symptoms than mothers with fewer than 25 visits (Baker-Henningham, Powell, Walker, & Grantham-McGregor, 2005)
Enhance mother–infant interactions	South Africa: In a sample of women at risk for depression, enhancing mother–infant interactions led to improvements in both mother–infant interactions and infant physical growth (Cooper et al., 2002)

agenda (Prince et al., 2007; Saxena et al., 2007) and emphasized the importance of women’s mental health for children’s development (Gill, Pande, & Malhotra, 2007). However, the public health commitment to mental health has been minimal in many low- and middle-income countries (Patel, Saraceno, & Kleinman, 2006). Few health programs include treatment for depression despite its high disease burden (Lopez, Mathers, Ezzati, Jamison, & Murray, 2006). Arguments for the prevention and treatment of maternal depression extend beyond child development and economic improvements (Gill et al., 2007; Mirza & Jenkins, 2004) to include moral and rights-based agreements (Dhanda & Narayan, 2007; Patel, Saraceno, et al., 2006). Policies and programs that reduce maternal depression will both improve women’s functioning and children’s health, development, and behavior, and protect women’s and children’s rights.

Among the strategies to convince governments to take more action are conventions such as the United Nations 1989 Convention on the Rights of the Child (CRC; Convention on the Rights of the Child [CRPD], 2002) and its 2006 Convention on the Rights of Persons With Disabilities (CRPD; 2006). The CRC, the most widely ratified convention of the United Nations (ratified by all countries except the United States), lays out actions that “States Parties” or governments must take to ensure children’s rights. Four main principles are the right to survival and development, the universality of rights, the indivisibility of rights, and the best interests of the child (CRC, 2002). Conventions also define who is responsible for fulfilling rights. For example, although governments are responsible (“duty bearers”) for ensuring that families have the livelihood and support needed to fulfill their responsibilities, families are also responsible.

Several of the 41 articles in the CRC are relevant to maternal depression. Article 2 states that children should not face discrimination on the basis of parents’ disability, including

mental illness, and that governments should actively support parental childrearing efforts and promote facilities and services focusing on the care of children. Article 27 states that governments recognize “the right of every child to a standard of living adequate for the child’s physical, mental, spiritual, moral and social development” and assist parents in ensuring this right (CRC, 2002).

The CRDP, signed after a decade of advocacy, includes maternal depression as a disability (Article 1). It includes protection for individuals (Dhanda & Narayan, 2007) and requires governments to provide both medical and social support. For example, Article 6 notes that “women and girls with disabilities are subject to multiple discrimination, and in this regard States Parties [governments] shall take measures to ensure the full and equal enjoyment by them of all human rights and fundamental freedoms” (CRPD, 2006). The CRPD also challenges stereotypes about mental illness and argues for creative strategies including self-help groups, occupational training, life-skills education, parenting skills, and local healing traditions (Dhanda & Narayan, 2007). As written, the Conventions provide powerful tools for increasing government support to reduce maternal depression.

To increase policy makers’ awareness of maternal depression, a U.N. Fund for Population Activities (UNFPA) and World Health Organization (WHO) International expert group developed a Consensus Statement on the interface between maternal mental health and child health and development in low-income countries. The Statement made three recommendations that addressed mental health as part of an overall program to improve maternal and child health: (a) reduce the factors that lead to maternal depression, (b) promote maternal and child health and development, and (c) increase availability of low-cost evidence-based interventions for maternal mental health problems. The Consensus Statement concludes that “political

will, concerted action by global stakeholders and resources are needed now to integrate maternal mental health in endeavors to achieve the Millennium Development Goals” (WHO–UNFPA, 2007, p. 3). Implementing the recommendations from the Statement requires a comprehensive, adequately funded approach to mental health, including the incorporation of mental health into existing health systems, with early detection and medication for the most severe cases; research on effective interventions such as social support, development of a legal and policy framework, stigma reduction, and capacity building.

SUMMARY

The prevention and treatment of maternal depression in low- and middle-income countries require continued advocacy. Mental health professionals in high-income countries are a valuable resource. They can advocate for mental health services within their own health systems and also address issues on the global mental health agenda. Investment in the prevention and treatment of maternal depression can interrupt the intergenerational cycle of depressive symptoms, thereby protecting both mothers and their children. Programs and policies are needed to develop effective and accessible identification, treatment, and prevention strategies for low- and middle-income countries; to reduce the prevalence of depressive symptoms; and to help families provide enriching opportunities and responsive interactions for mothers and children. Global policies and programs designed to reduce maternal depression are a critical component of protecting women’s and children’s rights.

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