Maternal mental health and child health and development in low and middle income countries

Report of the meeting held in
Geneva, Switzerland
30 January – 1 February 2008

World Health Organization

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The following participants (listed in alphabetical order) of the meeting on *Maternal Mental Health and Child Health and Development in Low and Middle Income Countries* that took place in Geneva, 30 January-01 February 2008, contributed the material included in this report:

Dr José M. Bertolote, Department of Mental Health and Substance Abuse, WHO; Dr Ana P Betran, Improving Maternal and Perinatal Health, Department of Reproductive Health and Research, WHO; Mrs Meena Cabral de Mello, Department of Child and Adolescent Health and Development, WHO; Dr Tarun Dua, Department of Mental Health and Substance Abuse, WHO; Prof Jane Fisher, Key Center for Women's Health in Society, University of Melbourne, Australia; Dr Michelle Funk, Department of Mental Health and Substance Abuse, WHO; Dr Simone Honikman, Perinatal Mental Health Project, Mental Health and Poverty Project, University of Cape Town, South Africa; Dr Takashi Izutsu, United Nations Population Fund (UNFPA), New York, USA; Dr Rita Kabra, Improving Maternal and Perinatal Health, Department of Reproductive Health and Research, WHO; Dr Elizabeth M Mason, Department of Child and Adolescent Health and Development, WHO; Dr Jodi E. Morris, Department of Mental Health and Substance Abuse, WHO; Dr Olayinka O. Omigbodun, Department of Psychiatry, University College Hospital, Ibadan, Nigeria; Dr Atif Rahman, Child Mental Health Unit, University of Liverpool, Liverpool, UK; Dr Benedetto Saraceno, Department of Mental Health and Substance Abuse, WHO; Prof Donna Stewart, Women's Health Program, University Health Network and University of Toronto, Toronto, Canada; Dr Jaqueline Wendland, Institut de psychologie, Université de Paris V/ Unité Petite Enfance et Parentalité, Hôpital Pitié-Salpêtrière, Paris, France.

Ms Sachiko A. Kuwabara and Dr Shekhar Saxena reviewed drafts of this report and provided their inputs. Ms Rosa Seminario provided administrative assistance for the meeting and development of this report.

Dr José M. Bertolote coordinated the preparation of the meeting and developed this report.

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INTRODUCTION

Perinatal[i] mental health problems have been studied in more than 90% of high income countries (HICs), whereas information is available only for 10% of low and middle income countries (LMICs) (*1*).

The impact of maternal mental health problems on infants in high income countries has been identified mostly in terms of psychosocial and emotional development, thanks to the groundbreaking early work of Spitz (*2*) and of Bowlby (*3*), who studied the emotional needs of infants and mother-child attachment. Subsequently, a large body of literature, also from HICs, documented the effects of maternal mental health on the child's psychological development (*4*), intellectual competence(*5*), psychosocial functioning (*6*) and rate of psychiatric morbidity (*7, 8*).

Recently, a series of studies have demonstrated that the impact of mental health problems in pregnant women, and up to one year after childbirth, in LMICs differed from what was known from HICs in two important aspects:

1. The prevalence of maternal mental disorders is significantly higher in LMICs (as will be described below); and

2. The impact on infants goes beyond delayed psycho-social development and also includes low birth weight, reduced breast-feeding, hampered growth, severe malnutrition, increased episodes of diarrhoea and lower compliance with immunization schedules.

Regrettably mental health is not specifically mentioned in the Millennium Development Goals, but the full realization of at least three of its goals are directly or indirectly related to women's mental health (or to the reduction of the impact of perinatal mental health problems)[ii], namely:

MDG 4: Reducing child mortality,

MDG 5: Improving maternal health,

MDG 3: Promoting gender equality and empowering women.

The contribution to the Global Burden of Disease (GBD) of only three classes of mental disorders (i.e., mood disorders, schizophrenia and specific anxiety disorders, generalized anxiety disorders *excluded*) among women age 15-44 years – the years most relevant for reproductive health[iii] – is 7% of the total GBD for women of all ages, and 3.3% of the total GBD for both sexes (*9*). Depression alone now ranks 5th among all causes of the GBD for both sexes combined and 4th for women only; it is expected to rank 2nd by the year 2020 (*10*). The perinatal period is a time of increased physical and emotional demands on the woman, and the disability associated with depression is likely to interfere with many essential functions related both to the mother and the infant. Therefore, it is not difficult to see that a large proportion of this burden of disease will affect women of reproductive age and their infants.

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[i] Most of the information reviewed, discussed and presented here refers to the period of pregnancy and up to one year after childbirth; for the sake of brevity it is referred to as the "perinatal period". It is acknowledged that for different purposes and constituencies "perinatal" may refer to different periods of time.

[ii] See also: WHO (in press). *Report of UNFPA-WHO International Expert Meeting: The Interface between Reproductive Health and Mental Health - Maternal mental health and child health and development in LMICs*. Geneva, WHO.

[iii] Reproductive health has been defined by the International Conference on Population and Development (ICPD, 1994), along the lines of WHO's definition of health, as "a state of complete physical, mental and social well-being in all matters relating to the reproductive system and to its functions and processes".

In view of the potential health, development, and human rights implications of recent findings, the World Health Organization's (WHO) Department of Mental Health and Substance Abuse in collaboration with the United Nations Population Fund (UNFPA), launched an initiative to understand this problem better and to identify and propose solutions to it. One of the first activities of this initiative was to convene a meeting of experts bringing together the expertise from other relevant WHO Departments and that of experts from both developed and developing countries who have been active in this area (see list of participants and agenda of the meeting in Annex 1). What follows is a summary of the presentations and discussions that took place during that meeting, as well as its main conclusions and recommendations.

PREVALENCE, RISK FACTORS, AND CONSEQUENCES TO WOMEN OF MATERNAL MENTAL HEALTH PROBLEMS IN LOW AND MIDDLE INCOME COUNTRIES

Prevalence

Studies conducted in HICs indicate a prevalence of 10-15% of perinatal mental disorders (*11, 12*). It has been suggested that rates of first onset and severe depression are three times higher in the postnatal period than in other periods of women's lives (*13*). More recently, Gavin et al. (*14*) confirmed those findings, suggesting that the rates are particularly high during the first trimester following childbirth.

Recent studies have found that in LMICs these problems are in the range of 10-41%, depending on the place and time of the perinatal period studied and the instruments employed. Table 1 presents a summary of these studies conducted with pregnant women (with prevalence rates varying from 10% to 41.2%), and Table 2 presents the equivalent information for puerperal women (with prevalence rates ranging from 14% to 50%)[i].

Admittedly, not all percentages refer to the same level of problem, i.e., in some studies a broader concept of psychological distress was used (as measured by screening instruments, such as the General Health Questionnaire (GHQ) or Self Reporting Questionnaire (SRQ), validated for local use), whereas in others a nosological diagnosis was used (obtained by instruments such as the Schedules for Clinical Assessment in Neuropsychiatry (SCAN) and the Mini-International Neuropsychiatric Interview (MINI)). Similar variability has been found in studies from HICs and it is postulated that this may be due to cross-cultural variables, reporting style, differences in the perception of mental disorders and the stigma attached to them, as well as differences in socio-economic environments (e.g., poverty, levels of social support or its perception, nutrition status, stress), and biological vulnerability factors (*15*).

When a firm diagnosis of a psychiatric disorder was made, the most frequently found condition – both during pregnancy and after childbirth – was depression, followed by anxiety disorders (without further specification). The frequent diagnosis of depression could be a consequence of

[i] Sources of Tables 1 and 2: 1) Fisher JRW. *Perinatal mental health in women in resource constrained settings*. Data for low and lower middle income countries. Presentation at the Meeting on Maternal Mental Health and Child Health and Development in Low Income Countries, World Health Organization, Geneva, 30 January-01 February 2008. 2) Additional information from selected upper middle income countries has been added to tables 1 and 2.

the instrument used, e.g., the Edinburgh Perinatal Depression Scale (*16*) (EPDS; see Annex 3). The choice of the instrument and the relatively small sample sizes may explain the absence of post-partum psychosis in the results found; alternatively, this serious psychiatric condition may have been an exclusion criterion in the sample selection.

Table 1. Psychiatric and psychological morbidity during pregnancy in low and middle income countries

Author(s), year	Country	Sample size	Results
Cox, 1979 (*17*)	Uganda	263	18.2% depression or anxiety
Aderibigbe, Gureje, Omigbodun, 1993 (*18*)	Nigeria	162	30% psychiatric "caseness"
Abioden, Adetoro, Ogunbode, 1993(*19*)	Nigeria	240	12.5% psychiatric disorder
Nhiwatiwa, Patel, Acuda, 1998 (*20*)	Zimbabwe	500	19% Shona Symptom Questionnaire (SSQ) >8 (high risk)
Chandran et al., 2002 (*21*)	India	384	16.2% antenatal depression
Patel, Rodrigues, De Souza, 2002 (*22*)	India	270	42% GHQ > 5
Rahman, Iqbal, Harrington, 2003 (*23*)	Pakistan	632	25% depressive episode (ICD-10)
Limlomwongse, Liabsuetrakul, 2006 (*24*)	Thailand	610	20.5% EPDS ≥10
Rochat et al, 2006 (*25*)	South Africa	242	41% EPDS ≥ 13
Adewuya et al, 2007 (*26*)	Nigeria	180	41.6% EPDS > 6 8.3% depression (DSM-IV)

In 1996 Warner et al. (*27*) demonstrated that in the UK the prevalence of psychiatric morbidity in the postnatal period varied between 10-15%. With regards to postnatal depression, a systematic literature review carried out by Robertson et al. (*28*), found that the rates of both, first onset and severe depression were three times higher in the postnatal period than during other periods of women's lives.

In a large proportion of women with postnatal depression, symptoms persist for at least a year postpartum. A review of studies from HICs showed that for about 30% of women with postnatal depression, symptoms persisted for up to a year after giving birth (*29*). A long-term follow-up study from a LIC, suggested that in women who were depressed during pregnancy, the rate of persistence in the first year may be even higher (i.e., 56%) (*30*).

Anxiety disorders are also common in the perinatal period. A systematic review of anxiety disorders during pregnancy and the postpartum period by Ross and McLean (*12*) revealed that these disorders are "common" during the perinatal period. They found that reported rates of obsessive-compulsive disorder and generalized anxiety disorder are higher in postpartum women than in the general population. As a result of their findings, they emphasized that the perinatal context represents a unique opportunity for the detection and management of anxiety disorders.

Table 2. Psychiatric and psychological morbidity in the postpartum period in low and middle income countries

Author(s), year	Country	Sample size	Results
Aderibigbe, Gureje, Omigbodun, 1993 (*18*)	Nigeria	162	14% psychiatric "caseness"
Nhiwatiwa, Patel, Acuda, 1998 (*20*)	Zimbabwe	500	16% postnatal mental illness (85% of which was depression)
Piyasil, 1998 (*31*)	Thailand	104 (<18 years) 94 (≥21 years)	38% of teenagers and 24% of adults had depression or anxiety
Cooper et al, 1999 (*32*)	South Africa	147	34.7% major depression (DSM-IV)
Affonso et al, 2000 (*33*) (Multi-country)	Guyana	106	50% EPDS > 9 29.8% BDI >12
Affonso et al, 2000 (*33*) (Multi-country)	India	110	35.5% EPDS > 9 32.2% BDI > 12
Chandran et al, 2002 (*21*)	India	359	11.9% EPDS > 12
Patel, Rodrigues, De Souza, 2002 (*22*)	India	270	23% depressive disorder (ICD-10)
Rahman, Iqbal, Harrington, 2003 (*23*)	Pakistan	632	28% depressive disorder (ICD-10)
Uwakwe, 2003 (*34*)	Nigeria	225	10.7% depression rate
Faisal-Cury et al. 2004 (*35*)	Brazil	113	15.9% postpartum depression
Fisher et al, 2004 (*36*)	Vietnam	506	32.7% EPDS >12
Adewuya, Afolabi, 2005 (*37*)	Nigeria	632	32.2% anxiety and/or depression
Adewuya et al. 2005 (*38*)	Nigeria	876	14.6% EPDS ≥ 9
Agoub, Moussaoui, Battas, 2005 (*39*)	Morocco	144	18.7% postpartum depression (DSM-V), 20.1% EPDS >12
Abiodun, 2005 (*40*)	Nigeria	379	18.6% EPDS ≥ 9,
Limlomwongse, Liabsuetrakul, 2005 (*41*)	Thailand	610	16.8% EPDS ≥10
Edwards et al. 2006 (*42*)	Indonesia	434	22.4% EPDS >10
Hussain et al. 2006 (*43*)	Pakistan	149	36% EPDS ≥ 12
Owoeye, Aina, Morakinyo, 2006 (*44*)	Nigeria	252	23% EPDS >12

In summary, recent evidence shows that the prevalence of mental health problems in the perinatal period in LMICs is higher than in HICs, and is more likely to be persistent. There have been no specific studies about the treatment coverage of these conditions in LMICs, but from what is known about the identification and treatment of mental disorders in general in these countries, it can be reasonably expected that perinatal mental health problems are both under-identified and under-treated. Thus, this leaves these women (and their infants) exposed to a range of negative consequences that will be discussed later.

Risk factors

Various hypotheses have been advanced to explain the high prevalence of mental health problems during the perinatal period, ranging from biological (e.g., hormones and neurochemical modifications) to psychological (e.g., personality types and ways of thinking) and social determinants (e.g., gender disparities in access to education and income-generating opportunities, social roles, disproportionate burden of unpaid work, exposure to family violence, low autonomy, poverty and coincidental adversity) explanations. Overall the evidence is that these conditions are multifactorially determined (*45*). The theory of Brown and Harris (*46*), that women are more likely to become depressed when they experience entrapment and humiliation, is highly salient to these data.

A non-exhaustive list of risk factors (many particularly relevant to LMICs and some cultures) which could explain the high prevalence of mental health problems in the perinatal period includes:

During pregnancy:

- Adolescent pregnancy
- Being unmarried or separated
- Unwanted pregnancy
- Marital relationship: unsupportive; polygamous
- Previous stillbirth or repeated miscarriage
- Nulliparity
- Poverty and lack of financial resources
- Lack of practical support
- Pregnancy as a result of rape
- Spouse/domestic violence
- Difficult relationship with in-laws

After childbirth:

- Difficulties with husband's behaviour (physical violence; verbal abuse; alcohol use; being illiterate and unemployed; providing little assistance; rejecting the pregnancy)
- Inability to confide in partner
- Poverty (low income; lack of personal income generating activity; inadequate housing)
- Overcrowding and lack of privacy
- Unintended pregnancy
- Adolescent pregnancy
- Unmarried
- Antenatal depression or severe anxiety
- Illnesses during pregnancy, antenatal hospital admission, operative birth
- Large number of children
- Infant unsettled, sick, not thriving
- Problematic relationship with in-law family (mother-in-law and sister-in-law)
- Birth of a girl child in cultures over-valuing boy child
- Lack of sustained, dedicated, practical care after birth for the culturally prescribed period
- Past psychiatric history
- Other stressful life events

Consequences

It has already been mentioned that in women of reproductive ages (15-44 years), three classes of mental disorders (i.e., mood disorders, schizophrenia and specific anxiety disorders, with the exclusion of generalized anxiety disorders not included by WHO in the calculations of GBD) represent 3.3% of the total GBD (all ages, both sexes) and 7% of the GBD for women of all ages.

Consequences to the woman

In addition to the economic losses that mental disorders represent, intangible costs in terms of human suffering and the total impact of these mental health problems on physical disorders are conceptually and methodologically difficult to estimate. There is, however, evidence that mental health problems during the perinatal period increase the risk and/or worsen obstetric outcomes, including preterm labour, obstetric complications, and pregnancy symptoms as summarized in Table 3 (*47*). These are more likely reciprocal associations rather than causally linked, which has not been much researched in this regard. In addition, data are emerging on the disproportionately high rates of suicide in the perinatal period. These data are briefly reviewed and discussed below.

Table 3. Summary of the impact of mental health problems on obstetric outcomes

Mental Health Problem	Obstetric Outcomes	Author(s), year
Depression	More obstetric complications	Field et al., 2004 (*48*);
	More pregnancy symptoms, visits to physicians and hospital admissions	Andersson et al., 2003 (*49*); Andersson et al., 2004(*50*); Larsson et al., 2004 (*51*)
	Need of pain relief during labour	Andersson et al., 2004(*50*); Smith et al., 1990 (*52*); Chung et al., 2001(*53*); Perkin et al., 1993 (*54*)
	Negative childbirth experience	Field et al., 2004 (*48*); Smith et al., 1990 (*52*)
Anxiety	More pregnancy symptoms, visits to physicians, and hospital admissions	Andersson et al., 2003 (*49*); Andersson et al., 2004 (*50*)
	Preterm labour	Dayan et al., 2002 (*55*)
	Need of pain relief during labour	Andersson et al., 2004 (*50*); Chung et al., 2001 (*53*)
Psychosis	Increased mortality	Bagedahl et al., 1988 (*56*)
	Increased hospitalization of children	Bagedahl et al., 1988 (*56*)

Maternal suicide in the perinatal period

In view of the absence of systematic data, a few studies that specifically examined causes of death during the perinatal period are worth mentioning, particularly in view of the dramatic and unexpected results they revealed.

In high-income countries, Appleby (*57*), Kendell (*58*), Frautschi, Cerulli, and Maine (*59*), and Brockington (*60*) have examined mortality during the perinatal period. Overall, they found that the leading cause of death during this period was suicide, with rates significantly higher than in non-pregnant, non puerperal women. Risk factors identified by these authors include adolescent pregnancy (in many cases complicated by unintended pregnancy and lack of access to contraception for single women), in addition to self-induced abortion (*61*).

Oates (*62*) investigated causes of death in women up to one year after giving birth in the UK and came to the conclusion that during the period, 1997-1999, suicide was the leading cause of death - responsible for 10% of all deaths. In 86% of the cases it was possible to make a psychiatric diagnosis, indicating that 68% of women who committed suicide were suffering from a serious mental illness (psychosis or severe depressive illness). Drife (*63*) observed similar results for the period, 2000-2002. Austin et al. (*64*) reporting for Australia, for the period 1994-2002, also found that suicide was the leading cause of death among women during the one year period after giving birth.

Unfortunately, in LMICs the situation does not seem to be better. A detailed review of 2882 deaths of women during pregnancy, or up to 42 days postpartum, conducted in three provinces in Vietnam, found that 29% of those deaths were attributed to non-natural causes (suicide, murder and accidents) of which 14% were due to suicide (*65*). An enlarged study conducted by the WHO, covering seven provinces in Vietnam, confirmed the high percentage of suicides among women in the perinatal period: 8% to 16.5%, depending on the province (*66*).

Lal et al. (*67*) examined 219 deaths of mothers after 9894 births in Haryana, India. They found that 20% of those deaths were attributed to suicide or 'accidental' burns (a common misclassification for suicide or femicide, particularly in India) (*68*).

Granja, Zacarias and Bergstrom (*69*) reviewed 27 cases of pregnancy related deaths, followed at the Maputo Central Hospital in Mozambique from 1991 to 1995, and found that 9 (30%) were cases of suicide.

IMPACT OF MATERNAL MENTAL HEALTH PROBLEMS ON THEIR INFANTS WITH PARTICULAR REFERENCE TO LOW AND MIDDLE INCOME COUNTRIES

The impact of perinatal mental health problems on infants has been studied in HIC, mostly in terms of neuro-psycho-behavioural variables, which are likely to apply in LMICs as well. Infants of depressed mothers show dysregulations affecting their behavior and physiology, thought to be derived from a prenatal exposure to a biochemical imbalance in their mothers (*48, 70*). Newborns of depressed mothers also have neurotransmitter imbalances (e.g., higher cortisol and lower dopamine and serotonin levels), are described as physiologically less mature (e.g., their electroencephalogram shows greater right frontal asymmetry, and lower vagal tone), and they perform less optimally on several parameters, measured by the Brazelton Neonatal Assessment Scale (e.g., less auditory and visual orientation, motor tone, activity level, and robustness, but more irritability) (*71, 72, 73*) than newborns of non-depressed mothers. This poorer performance is also at risk of being reinforced by the disturbed postnatal interactions offered by their depressed mothers. Reciprocally, infants born to depressed mothers may discourage the mother's effort to interact with their infant and thereby entrain a vicious circle of disturbed and poorer interactions (*74, 75*).

Neonates of mothers with high anxiety levels during pregnancy have decreased motor maturity and vagal tone when compared to those of non-anxious mothers. They cry more, change more frequently from one behavioral state to another, they are perceived by their mothers as having a more difficult temperament, and they also have more gastro-intestinal problems and delayed growth (*76, 77, 78, 79*). Several other authors have observed that high maternal anxiety during pregnancy may also predict and have long term effects on behaviour and emotions (e.g., inattention, and hyperactivity in children aged 4 years) (*80*). In addition, mothers with high anxiety levels at 4 weeks postpartum have infants with lower regulation of emotional states, poorer motor performance and significantly impaired orientation. According to these authors, maternal anxiety may affect attention and reactivity. In fact, these infants also had lower mental developmental scores at the age of 2 years (*81, 82*).

In addition to these findings, there is now evidence from studies conducted in LMICs that perinatal mental health problems (particularly depressive states) are directly linked, as a risk factor independent from obstetric and other factors, to several unwanted outcomes (*83*). Most available evidence concerns lower infant birth weight and nutritional status of the infant.

Several well conducted studies (*84, 85, 86, 87, 88*) have established the significant risk of lower birth weight in babies of women depressed both during pregnancy and/or after childbirth. This association remained significant even after controlling for maternal Body Mass Index (BMI), socioeconomic status and number of children (*84*).

Rahman and Creed (*88*) have also identified that the peak of the relative risk (4.4) of underweight and stunting in infants compared to controls occurs at 6 months after birth; the most vulnerable and dependent period of an infant's life. This risk decreases to a relative risk of 2.5 by the age of one year.

A series of other studies, summarized in Table 4, have shed light on the association between maternal mental health problems and child growth.

Table 4. Association between maternal mental health problems and child growth

Author, year	Country	Subjects	Results (Instrument)	Significance
Patel, DeSouza, Rodrigues, 2003 (*86*)	India	Hospital-based cohort of 171 infants	<5 centile weight-for-age (EPDS)	Risk ratio (RR) 2.3 (95% CI: 1.1 to 4.7)
Rahman et al., 2007 (*30*)	Pakistan	Clinic-based, case-control study	<3 centile weight-for-age at 8 months (SRQ-20)	Odds ratio (OR) 3.9 (95% CI: 1.6-38.5)
Anoop et al., 2004 (*89*)	India	Community-based, case-control study; 72 cases, 72 controls	50-80% *v* >80% of expected weight-for-age (SCID)	Odds ratio (OR) 7.4 (95% CI: 1.6-38.5)
Harpham, et al., 2004 (*90*)	Ethiopia, India, Namibia and Peru	Community-based	Weight-for-age z-scores (WAZ) & Height-for-age z-scores (HAZ) < -2 (SRQ-20)	Significant in India and Namibia Non-significant in Ethiopia and Peru
Adewuya et al., 2007 (*91*)	Nigeria	Community-based, case-control study	Weight-for-age and height-for-age at 6 months	Weight: Odds Ratio (OR) 4.21 (95% CI: 1.3-13.2) Height: Odds Ratio (OR) 3.34 (95% CI: 1.18-9.52)
Stewert et al., in press (*92*)	Malawi	Clinic-based, case-control study	WAZ and HAZ at 8 months (SCID)	Significant difference in HAZ (p=0.001)
Tomlinson et al., 2006 (*93*)	South Africa	147 mother-child dyads from a peri-urban settlement	No clear effect observed	Effect observed at 18 months disappeared when birthweight was considered

In addition, the following adverse consequences to infants of maternal mental health problems have also been established:

- increased admission to neonatal care unit (*53, 94*);
- higher rates of diarrhoeal diseases (*88, 95*);
- higher rates of infectious illness and hospital admissions (*95*);
- diminished completion of recommended immunization schedules (*88*); and
- worse physical, cognitive, social, behavioural and emotional development in children (*86*).

Several studies have demonstrated that maternal depression and stress lead to early cessation of breastfeeding, with its well-known range of negative consequences (*91, 96, 97, 98*).

In addition to the impact of maternal mental health problems on infants, its negative consequences can be observed at later ages (*80-82*); which might create a negative snowball

effect on the cognitive, emotional and behavioural characteristics of the individual who is progressively left behind, with possible repercussions into adult age. O'Connor et al. (*99*) for instance, have demonstrated, in a longitudinal study, that antenatal maternal anxiety significantly predicted behavioural/emotional problems in 4 year-old boys and girls after accounting for covariates. The significant effect persisted even when controlled for co-varying maternal anxiety up to 33 months postnatally. They attributed these results to a direct effect of maternal mood on fetal brain development, which later affects the behavioural development of the child. These authors were also able to demonstrate that antenatal anxiety and postnatal depression represent separate risks for behavioural/emotional problems in children and act in an additive manner (*80*).

Depressed mothers in developed countries have been observed to provide less quantity and poorer quality of stimulation for their infants (*100*) and to be slower in responding and less responsive to them (*101, 102*). Depressed mothers are also more likely to have negative views of themselves as parents (*103*), seeing themselves as having less personal control over their child's development, and less able to positively influence their children[1].

In summary, maternal mental health is inextricably linked with both physical and psychological development of children. Addressing the mental health needs of the mother is likely to benefit these important outcomes. However, maternal mental health has been ignored in both child nutrition and development programmes and it may be the missing link in maternal and child health programmes.

RECOGNITION/ IDENTIFICATION OF MENTAL HEALTH PROBLEMS DURING THE PERINATAL PERIOD

Although pregnancy is considered a normal state, it is a vulnerable period in a woman's life because of exposure to a series of physical, mental, and socially adverse conditions. The earlier these conditions are recognized and addressed, the greater the chances of minimizing their impact.

Addressing psychological distress during the perinatal period in an appropriate way makes circumstances better for the woman and her baby in the contexts in which they are living. Health workers attitudes and behaviours are of fundamental importance to promoting mental health. Respectful, courteous, empathic, non-judgemental behaviours and provision of information, encouragement and praise promote optimal mental health for all. The principles guiding the recognition/ identification of mental health problems of women in the perinatal period are the same that apply to assisting women with their other health needs.

The early recognition of mental health problems in general populations has received considerable attention. One can utilize the results of the numerous published population studies for the early recognition and identification of psychological distress in pregnant women. Two of the "general screening instruments" that have been most frequently utilized in the last 20 years are the General Health Questionnaire (GHQ) (*105*) and the Self-Reporting Questionnaire (SRQ) (*106*). However, the EPDS has become a standard instrument for the identification of depression in pregnant and postpartum women; particularly in developed countries (see Tables 1 and 2). Some recent studies indicate that the SRQ may be an equally valid and reliable tool for screening non-psychotic perinatal mental health problems (*107, 108*).

Gaynes et al. (*109*) did a meta-analysis of screening instruments (i.e., EPDS, Beck Depression Inventory (BDI), Postpartum Depression Screening Scale (PDSS), and the Center for Epidemiological Studies Depression Scale (CES-D)) for depression and concluded that, "various screening instruments can identify perinatal depression". They concluded that these instruments have high specificity and low sensitivity for depressive states, and this acquires a greater importance when deciding on whether false-positives or false-negatives are preferred.

However, psychological distress does not necessarily mean mental disorder, and the establishment of a psychiatric diagnosis implies either an interview with a skilled mental health worker or the use of more complex and sophisticated standardized instruments for any type of psychiatric diagnosis (e.g., Composite International Diagnostic Interview (CIDI), Schedules for Clinical Assessment in Neuropsychiatry (SCAN)) or that are focussed on specific psychiatric disorders (e.g., Schedule for the Assessment of Depression and Schizophrenia (SAD-S)).

At any rate, many screening or diagnostic instruments have been designed and developed as a substitute for a clinical interview with a skilled health worker, a rare "commodity" in most LMICs. A careful look of those instruments – as well as at good clinical practice – reveals that the presence of psychological distress can be recognized from the answers to a few simple questions (*110*) in addition to behavioural observation (*111*).

For the recognition of depression, the introductory questions found in most instruments are the following, or variations of them:

- (During the past month) Have you felt sad, depressed or hopeless?
- (During the past month) Have you lost interest in/pleasure in/lacked energy to do things you usually enjoy?

If the answer is "yes" to either of them, then further exploration is required, either with the help of a standardized instrument or of other simple clinically relevant questions. Also, the woman should be observed for signs of tearfulness, slowing down or restlessness.

Similarly, for the recognition of anxiety, the relevant questions are:

- (During the past month) Have you felt anxious, worried or stressed most of the time?
- (During the past month) Have you sometimes felt suddenly terrified for no obvious reason?
- (During the past month) Have you frequently thought or dreamt about something terrible that happened to you in the past?

As in the case for depression, if the answer is "yes" to any of these questions, further exploration by means of a standardized instrument or using other simple clinically relevant questions should be conducted.

Once a woman has been recognized as having a mental health problem, she should be referred to the nearest health care setting with health workers skilled enough to make a psychiatric diagnosis and institute the appropriate treatment. Obviously, this is very much dependent on the nature and structure of both health and perinatal care available locally, and no generalizations can be made.

The specific forms of assistance to be given to these women will be discussed in the next section.

COMMUNITY-BASED INTERVENTIONS FOR IMPROVING HEALTH AND PSYCHOSOCIAL OUTCOMES

There is plenty of evidence that mental health problems during the perinatal period, particularly around birth, can affect the well-being, the psychological balance, and the attitudes of many mothers, making coping with the many tasks of child care difficult. Fortunately, research has shown that with some help and support most mothers can positively modify any difficulties they may be having with thinking, behaving, and caring for their babies. This may improve, not only their own mental well being, but also provides better conditions for the optimal development of their babies. The best results are obtained when interventions are carried out with the mother, the baby, and the relationship between them.

Integrating mental health care into maternal health programmes

Once a mental health problem has been recognized in a woman in the perinatal period, there are a series of community-based interventions that have demonstrated their usefulness and efficacy. These range from empathy and active listening, to the utilization of different psychosocial approaches, to the use of medication, according to the woman's need. Methods to be applied will also depend on the severity of the condition, the ability and knowledge of health workers, and the local health and social infrastructure. A recent meta-analysis (*112*) aimed at evaluating the treatment effects for non-psychotic depression during pregnancy and postpartum comparing interventions by type and timing is summarized in Table 5.

Table 5. Meta-Analysis: Perinatal Interventions Grouped by Intervention Type

Type of Intervention	Number of Intervention Trials	Number of Participants	Treatment Effect (effect size)	p- Value
Medication + CBT*	1	30	3.871	< 0.001
Medication	2	45	3.048	< 0.001
Group**	1	30	2.046	< 0.001
IPT***	4	181	1.260	< 0.001
CBT	3	172	0.642	< 0.001
Psychodynamic	1	95	0.526	0.014
Counseling	2	147	0.418	0.014
Educational	2	222	0.100	0.457

*CBT=cognitive behavioural therapy

**Group therapy with cognitve behavioural, educational and transactional analysis components

*** IPT=interpersonal therapy

Components of these interventions can be integrated into primary health care, without the need of systematically sending patients to secluded psychiatric care institutions. This approach was piloted for use for the management of postnatal depression in Chile, a middle income country, by Rojas et al. (*113*).

A brief outline of how perinatal mental health could be structured within existing health systems is as follows:

For all women in the perinatal period, when the first and subsequent contacts with health personnel take place there should be:

- Respect and courtesy
- Active listening
- Use of open-ended questions
- Building a relationship through establishing rapport
- Non-judgemental reactions to disclosures

For women with mild to moderate mental health problems, active listening and opportunities for women to describe their experiences and tell their stories are usually a useful way of establishing good rapport. The health worker can then consider moving into a problem-solving approach that includes:

- Assistance with social problems including housing
- Active assistance with problems in the marital relationship
- Linking women together in discussion groups
- Closer monitoring
- Provision of increased support, according to the woman's needs

Next in complexity comes a psycho-educational approach in which there is consideration of:

- Women's own physical and mental wellbeing: nutrition, rest, exercise, self-care, management of sadness and worries
- Mother-fetal/Mother-baby relationship: imagining the baby and preparing for life with a baby
- Relationships with others: quality and sufficiency

In providing these interventions, two approaches, namely cognitive behaviour therapy (CBT) and interpersonal therapy (IPT) - obviously adapted for local situations, have demonstrated their efficacy (see Table 5). Both interventions are equally recommended, depending on the level of skills and knowledge of caregivers.

For women with severe impairment in daily functioning or ideas of self-harm, the following should be considered:

- Referral to a specialist practitioner or service
- Prescription of psychotropic medications: This needs to be in accordance with existing guidelines, for example:
    - The UK National Institute for Health and Clinical Excellence (NICE) Guidelines (*114*) about the use of pharmaceutical treatments in pregnant and lactating women.
    - Psychiatric Care in Anti-Retroviral (ARV) Therapy (No. 3) in the Mental Health and HIV/AIDS Therapy Series (*111*)
- Country specific norms and guidelines about permitted prescribers

Some women have unique mental health care needs. These include:

- Women experiencing family violence
- Women pregnant as a result of forced intercourse
- Women who are HIV positive
- Women who are infertile
- Women who have experienced pregnancy losses, stillbirths or whose babies are seriously ill, malformed or have died
- Adolescents who are pregnant
- Women who are refugees, internally displaced or from areas affected by war, conflict or natural disaster
- Women who are lone mothers
- Women with disabilities

For these women, special programmes, or special components in mainstream programmes, should be considered. These will require particular skills to be developed if they are not available locally.

Health care workers will require education and training to provide the mental health care outlined above. This training should always be accompanied and followed by ongoing supervision in order to maintain both the psychological skills of health workers and the quality of the care provided.

Integrating maternal mental health with child health

A comprehensive consideration of mental health problems in women in the perinatal period cannot ignore the identification and management of their impact on infants, since the mother is usually the most important person for the baby during the first year of life. In order to be properly cared for, the baby needs a physically and emotionally capable mother (or primary caregiver), in addition to a supportive environment provided by the father and extended family. This is a high order task that goes well beyond the boundaries of individual specific agencies interested in the problem, be they within or outside the UN system. Therefore a concerted and articulated action across those agencies is needed.

Because the mental health of the mother and physical development, especially nutrition, of the infant are so inextricably linked, an approach to tackle these through an integrated programme of care for both mother and infant has been propounded (*115*). The authors suggest that maternal mental health is a critical mediator between social adversity and poor infant growth. They argue for the need to develop, and to integrate within health systems at a population level, low cost interventions which promote maternal mental health in synergy with interventions to tackle child under-nutrition and promote child development. The first component of such an intervention might be to improve recognition of maternal mental distress by health workers during pregnancy and in the postnatal period. Locally validated questionnaires, such as the WHO's SRQ or the EPDS could be used for this purpose (see section above). Secondly, interventions should be developed that can be integrated seamlessly into the work of community and maternal and child health (MCH) workers (who already engage in infant-nutrition and development-related activities) and aim to engage with these mothers, empower them, and provide support, practical help and advice on child development in a psychologically therapeutic manner.

One such approach is currently being tested in a socially deprived rural area of Pakistan (*30*). Following a multi-method study in rural Pakistan, a manualised intervention employing principles of cognitive behaviour therapy (CBT) was developed. This is being delivered by ordinary village-based primary-level health workers. The intervention, called the "Thinking Healthy Programme" (THP), used the following CBT techniques:

- Active listening
- Collaboration with the family
- Guided discovery - a style of questioning both to gently probe for family's health beliefs and to stimulate alternative ideas
- Homework - trying things out in between sessions, putting what has been learned into practice

These techniques were applied to health workers' routine practice of maternal and child health education. The intervention was integrated into existing health systems in rural Pakistan and pilot studies showed that both health workers and depressed mothers found the programme relevant and useful. "Lady Health Workers" found this method as helpful, inasmuch as it provided them with a structured routine tool that also facilitated communication with their clients. A randomised controlled trial of the intervention has been completed and preliminary results indicate benefits for both maternal mental health and infant health outcomes[1].

It appears from the above study, that attention to the baby's growth may represent a good strategic entry point to address depression in mothers. This is also supported by a study conducted in Jamaica by Baker-Henningham et al. (*116*). The researchers found that a programme to promote early stimulation of malnourished children of depressed mothers, not only improved the target children's nutritional outcome, but also reduced depressive symptoms in their mothers.

The mother-baby relationship

When there are maternal mental health problems, specific interventions are needed because adverse maternal attitudes and behaviours, dysfunctional infant caregiving and negative environmental conditions interfere with parental and family functioning, with long lasting effects. There is evidence on the efficacy of some simple, specific interventions that can be delivered by first level health care providers based either at home visits or at health facilities (e.g., maternity centres, or maternity hospitals) (*117, 118*). It has also been shown that the highest impact is reached with a mix of centre-based and home visit services (*119, 120*).

Human ecology (*121*), self-efficacy (*122*) and attachment (*123*) are the theoretical approaches behind most of the proposed interventions, implemented through a variety of media. Given the variety of theoretical approaches and methods of implementation, a comparative assessment is difficult. A mix of approaches and methods of transmission seem to provide better results than using either of them in isolation. Adequate training and supervision of intervention providers is a crucial component of these interventions.

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[i] Rahman A. *Maternal depression and infant growth - from epidemiology to intervention*. Presentation at the Expert Meeting on Maternal Mental Health and Child Health and Development in Low Income Countries, World Health Organization, Geneva, 30 January-01 February 2008

NEXT STEPS

Basic knowledge

Several papers on perinatal mental health in LMICs have recently been published. In view of this, and of other existing gaps in the knowledge, a few systematic literature reviews are needed including:

a. Suicide and perinatal mortality in both developed and developing countries.

b. Impact of maternal mental health problems on mothers and infants in developing countries.

c. Interventions for reducing the impact of maternal mental health problems on mothers and infants in developing countries.

Manual

Since there are few available tools and instruments for the identification and management of mental disorders during the perinatal period, it would be extremely useful to have all this information captured in a manual addressed to first line health workers, integrated into primary health care. This manual should be in line with the most recent versions of other relevant WHO manuals, such as the Integrated Management of Pregnancy and Childbirth (IMPC) and the Integrated Management of Childhood Illness (IMCI) manuals. There are several other resources that have already been field-tested in LMICs that might be useful, such as, the UNICEF/International Medical Corps' *Early Childhood Development: Learning through play (124)* and the *Thinking Healthy Programme (30)*.

Before being made available for general use, this manual should be field-tested in a country, to be selected in consultation with relevant WHO departments, regional offices, potential country offices, UNFPA and other interested agencies.

This field test should follow an assessment of the local needs of the government, health system, health workers, and mothers through a consultative and participatory process and the establishment of local priorities.

CONCLUSIONS

The participants of the meeting concluded:

a) Mental health problems of pregnant women and mothers of newborns in LMICs is a serious but under-recognized public health problem, making a substantial contribution to maternal and infant morbidity and mortality.

b) One in three to one in five pregnant women and mothers of newborns experience significant mental health problems, the most common of which are depression and anxiety states (e.g. 12.5 - 42% of pregnant women and, 12 - 50% of mothers of newborns in LMICs screen positive for symptoms of depression).

c) Suicide is one of the leading causes of pregnancy-related deaths.

d) Mothers whose mental health is poor are less able to care for themselves and their infants, whose survival, health and development could be then compromised.

e) Poor maternal mental health may affect the health and development of children. For instance, maternal depression in the prenatal and postnatal periods predicts poorer growth and higher risk of diarrhoea in infants, which may reduce child survival.

f) There are simple, reliable, and affordable tools for the recognition of mental health problems in women during the perinatal period. Since depression can be identified relatively easily, within the context of primary health care, it is an important marker for high-risk infants.

g) There are efficient and affordable approaches for the assistance of women with mental health problems during the perinatal period within the context of primary health care.

h) Early treatment of prenatal and postnatal mental health problems would benefit, not only the mother's mental health, but also the infant's physical health and development.

i) Attention to the psychosocial and emotional needs of infants (e.g., a good mother-baby relationship) is crucial for optimal physical, cognitive, emotional, behavioural and social development of children.

h) There are simple and affordable interventions, deliverable at the community level by first level health care providers that address and improve maternal quality of life and the global development of children.

j) Attention to mental health is fundamental in attaining the Millennium Development Goals of improving maternal health, reducing child mortality, promoting gender equality and empowering women, achieving universal primary education and eradicating extreme poverty and hunger.

RECOMMENDATIONS

The meeting participants recommended the following:

To WHO

1. Establish an interagency group including UNFPA, UNICEF, WHO, UNAIDS and other major relevant stakeholders.
2. Establish a cross-departmental collaboration including all relevant departments and programmes[i]. This collaboration should, for instance, facilitate the integration of mental health care into existing WHO strategies to promote the health of mothers and infants, in particular the Integrated Management of Pregnancy and Childbirth (IMPC) and the Integrated Management of Childhood Illness (IMCI).
3. Together, the interagency group, the technical advisory group, and the cross-departmental collaboration should link with key research, policy and implementation groups (active at both international and local levels) involved with relevant initiatives to reduce perinatal mortality and morbidity[ii].
4. Existing relevant WHO Collaborating Centres for Research and Training and international non-government organizations relevant to this work should also be involved.
5. WHO, in collaboration with UNFPA, should develop a manual for recognition of and assistance for maternal mental health and child health and development problems in LMICs based on the best evidence available.
6. WHO, in collaboration with UNFPA, should develop training materials and resources for both first and second level community and health workers in LMICs based on the best evidence available.
7. WHO should develop a demonstration project to test the feasibility of implementing the above mentioned manual in a country identified according to the criteria agreed upon at the experts' meeting. Cost-effectiveness is one of the elements that should also be evaluated.

To UNFPA

8. UNFPA should operationalize the inclusion of maternal mental health in its 2008-2011 strategic plan through the collaboration mentioned above.

To both WHO and UNFPA

9. A technical advisory group of experts identified by WHO and UNFPA should be formed to provide advice about evidence and policy regarding maternal mental health, child health, and development in LMICs.
10. Funds should be identified and mobilized by WHO and UNFPA to realize these recommendations.

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[i] For instance, Child and Adolescent Health, Gender and Women Health, HIV/AIDS, Making Pregnancy Safer, Partnership for Maternal Newborn and Child Health, and Reproductive Health and Research.

[ii] Among others: International Health Partnership, Deliver Now for Women and Children, Countdown for Survival, G8 summit and Mental Health and Poverty Project, Liverpool University, London School of Hygiene and Tropical Medicine, Oxford University Research Group, International Association for Women's Mental Health and the Lancet Global Mental Health, Early Childhood, Nutrition and Maternal Health Groups.

ANNEX 1

PRINCIPLES FOR A MANUAL FOR RECOGNITION OF AND ASSISTANCE FOR MENTAL HEALTH PROBLEMS IN PREGNANT WOMEN AND MOTHERS OF NEWBORNS

Mental health needs to be integrated into WHO's and UNFPA's existing maternal and child health policies. This requires:

a) Strategies to recognize, assess and assist mental health problems in pregnant women and mothers of newborns. Assistance for mental health problems includes: recognition, prevention, early intervention and treatment.

b) Health care workers need both interviewing and observational skills in order to be able to recognize and assess psychological distress in women attending for antenatal and postnatal health care.

c) The essential characteristics of health care services in which these questions can be asked and are likely to be responded to, need to be established. These include: the setting, training needs and capacity to assist identified needs.

Recognition

d) Establish whether it is better to use a screening questionnaire (that covers more than one condition) or a limited number of condition-specific questions as part of history taking:

- **Screening questionnaires**

  Screening questionnaires that might be appropriate include locally validated versions of the WHO Self Reporting Questionnaire (SRQ12 or the SRQ20) or the Edinburgh Postpartum Depression Scale (EPDS).

- **Questions concerning depression**

  - The NICE guidelines recommend that women are asked the following questions at the first antenatal contact with a health care worker and 4 to 6 weeks and 3 to 4 months after birth:
    - During the past month, have you often been bothered by feeling down, depressed or hopeless?
    - During the past month, have you often been bothered by having little interest or pleasure in doing things?

    If the woman answers yes to either of these questions, then a third question needs to be asked:

    - Is this something you feel you need or want help with?

- The WHO Psychiatric Care in Anti-Retroviral (ARV) Therapy Series recommends that the following questions are asked:

Over the last two weeks:

- Have you felt sad, depressed or hopeless?
- Have you lost interest, or pleasure in, or energy to do things you usually enjoy?
- Have you ever had a previous episode of severe depression?

An informant can select the appropriate image from a series of simple diagrams of faces indicating different levels of distress.

- **Questions concerning anxiety**
  - The WHO Psychiatric Care in Anti-Retroviral (ARV) Therapy Series recommends:
    - Do you feel anxious, worried or stressed most of the time?
    - Do you sometimes suddenly feel terrified for no obvious reason?
    - Do you frequently think or dream about something terrible that happened to you in the past?
- **Concerning disability / functional impairment**
    - A single question on disability, e.g., during the past month has sadness or worry interfered with your ability to do your daily work? If so, for how much of the time?
    - The WHO Disability Assessment Schedule (WHO-DAS II 12).

e. In addition to direct questions, the following observations of behaviour and appearance can be indicators of emotional distress:

- appears sad, slowed down, tearful or restless;
- appears frightened, anxious or restless;
- has persistent non-specific somatic symptoms;
- has unusual ideas or behaviours.

Assistance

f. For all women in the perinatal period, when the first and subsequent contacts take place there should be:

- Respect and courtesy
- Active listening
- Use of open-ended questions
- Building a relationship through establishing rapport
- Non-judgemental reactions to disclosures

g. For women with mild to moderate mental health problems, active listening and opportunities for women to describe their experiences and tell their stories should be considered including:

- Assistance with social problems including housing
- Active assistance with problems in the marital relationship
- Linking women together into discussion groups
- Closer monitoring
- Provision of increased support, according to the woman's needs

h. Next in complexity comes a psycho-educational approach where there is consideration of:

- women's own physical and mental wellbeing: nutrition, rest, exercise, self-care, management of sadness and worries
- mother-fetal/mother-baby relationship: imagining the baby and preparing for life with a baby
- relationships with others: quality and sufficiency

In providing these interventions, two approaches, namely cognitive behaviour therapy and interpersonal therapy (obviously adapted for local situations) have already demonstrated their efficacy. They are equally recommended, depending on the level of skill and knowledge of caregivers and the needs of the woman.

i. For women with severe impairment in daily functioning or ideas of self-harm, the following should be considered:

- Referral to a specialist practitioner or service
- Prescription of psychotropic medications in accordance with existing guidelines, such as:
  - The NICE Guidelines (*114*) about the use of pharmaceutical treatments in pregnant and lactating women.
  - Psychiatric Care in Anti-Retroviral (ARV) Therapy (No. 3) in the Mental Health and HIV/AIDS Therapy Series (*111*).

j. There are groups of women who have unique mental health care needs. These include women:

- who are experiencing family violence,
- pregnant as a result of forced intercourse,
- who are HIV positive,
- who are infertile,
- who have experienced pregnancy losses, stillbirths or whose babies have died,
- who are refugees, internally displaced or from areas affected by war, conflict or natural disasters,
- who are lone mothers,
- with disabilities, and
- adolescents who are pregnant.

ANNEX 2

List of Participants

WORLD HEALTH ORGANIZATION

Meeting on Maternal Mental Health and Child Health and Development,

Geneva, 30 January - 01 February 2008

Temporary Advisers

Prof Jane FISHER
Associate Professor
Coordinator of Education and Training
Key Center for Women's Health in Society
WHO Collab.Center in Women's Health
School of Population Health
University of Melbourne
Victoria 3010
AUSTRALIA

Telephone No. : +61 3 8344 8819
Fax No. : +61 3 9347 9824
Email : jrwf@unimelb.edu.au

Dr Simone HONIKMAN
Principal Medical Officer (Obstetrics) &
Head Perinatal Mental Health Project
Department of Psychiatry and Mental Health
University of Cape Town
Child Health Unit
46 Sawkins Road
Rondebosch, 7700
Cape Town
SOUTH AFRICA

Telephone No. : +27 21-685 4103
Fax No. : +27 21-686 3374
Email simonehonikman@networld.co.za

Dr Takashi IZUTSU
Technical Analyst
United Nations Population Fund, UNFPA
220 East, 42nd Street
New York, N.Y. 10017
USA

Telephone No. : +1 (212) 297-2706
Fax No. : +1 (212) 297-4915
Email : izutsu@unfpa.org
izutsu@gakushikai.jp

Ms Nester MOYO
Programme Manager
International Confederation of Midwives
Laan van Meerdervoort 70
2517 AN The Hague
The Netherlands
(Invited but unable to attend)

Telephone No.: +31 (70) 3060520
Fax No.:
Email: n.moyo@internationalmidwives.org

Dr Olayinka O. OMIGBODUN
Senior Lecturer in Psychiatry
Department of Psychiatry
University College Hospital
Consultant Psychiatrist (Child & Adolescent)
University College Hospital
Ibadan
NIGERIA

Telephone No. : +234-2-750-3880
Fax No. : +234-805-305-2296
Email : fouryinkas@yahoo.co.uk

Dr Atif RAHMAN
Professor of Child Psychiatry
University of Liverpool
Child Mental Health Unit
Royal Liverpool Children's Hospital
Alder Hey, Mulberry House
Eaton Road, Liverpool L12 2AP
UK

Telephone No. : +44 151 252 5509
Fax No. : +44 (0)151 252 5285
Email : Atif.Rahman@liverpool.ac.uk

Prof Donna STEWART
University Professor and Chair
Women's Health
University Health Network and
University of Toronto
200 Elizabeth St, EN-7-229
Toronto, M5G2C4, ON
CANADA

Telephone No. : 416 340 3846
Fax No. : 416 340 4185
Email : donna.stewart@uhn.on.ca

Dr Nurper ULKUER
ECD Special Advisor
United Nations Children's Fund, UNICEF
UNICEF House
3 United Nations Plaza
New York, New York 10017
USA
(Invited but unable to attend)

Telephone No. : +1 212 326.7000
Fax No. : +1 212 887.7465
Email : nulkuer@unicef.org

Dr Jaqueline WENDLAND
Associate Professor
Université de Paris V
Institut de psychologie
Laboratoire de Psychopathologie et de
Neuropsychologie Cliniques
71, avenue Edouard Vaillant
92774 Boulogne Billancourt
Unité Petite Enfance et Parentalité
Hôpital Pitié-Salpêtrière
28, Allée Vivaldi
75012 Paris - FRANCE

Telephone No. : +33 1 55 20 58 87
Email : JqWendland@aol.com
Jaqueline.Wendland@univ-paris5.fr

Telephone No.: +33 1 43 41 81 60

WHO Headquarters

Dr Jose Manoel BERTOLOTE
Coordinator; Management of Mental and Brain Disorders
Mental Health and Substance Abuse
Telephone No. : 13627/13618
Email : bertolotej@who.int

Dr Ana Pilar BETRAN
Medical Officer, Improving Maternal and Perinatal Health
Telephone No. : 14205
Email : betrana@who.int

Mrs Meena CABRAL DE MELLO
Scientist, Adolescent Health and Development
Child and Adolescent Health and Development
Telephone No. : 13616/14239
Email:cabraldemellom@who.int

Dr Tarun DUA
Medical Officer
Mental Health and Substance Abuse
Telephone No. : 13059
Email : duat@who.int

Dr Michelle FUNK
Coordinator, Mental Health Policy and Service Development
Mental Health and Substance Abuse
Telephone No. : 13855
Email : funkm@who.int

Dr Rita KABRA
Consultant, Improving Maternal and Perinatal Health
Telephone No: +41(0)22 3002908
Email: kabrar@who.int
rita_kabra@freesurf.ch

Dr Q. Monirul ISLAM
Director, Making Pregnancy Safer
Telephone No.: 15509
Email: islamm@who.int

Dr Jodi Eileen MORRIS
Technical Officer
Mental Health and Substance Abuse
Telephone No. : 13729
Email : morrisj@who.int

Dr Adepeju Aderemi OLUKOYA
Medical Officer/Coordinator, Gender, Women and Health
Telephone No. : 13306/13307
Email : olukoyaa@who.int

Dr Benedetto SARACENO
Director, Mental Health and Substance Abuse
Telephone No. : 13603/13634
Email : saracenob@who.int

Dr Francisco Ferreira SONGANE
Director, Partnership for Maternal, Newborn and Child Health
Telephone No. : 14931/14914
Email : songanef@who.int

Edinburgh Postnatal Depression Scale[1] (EPDS)

Name: _____ Address: _____

Your Date of Birth: _____ _____

Baby's Date of Birth: _____ Phone: _____

As you are pregnant or have recently had a baby, we would like to know how you are feeling. Please check the answer that comes closest to how you have felt **IN THE PAST 7 DAYS**, not just how you feel today.

Here is an example, already completed.

I have felt happy:
- □ Yes, all the time
- ☒ Yes, most of the time
- □ No, not very often
- □ No, not at all

This would mean: "I have felt happy most of the time" during the past week. Please complete the other questions in the same way.

In the past 7 days:

1. I have been able to laugh and see the funny side of things
   - □ As much as I always could
   - □ Not quite so much now
   - □ Definitely not so much now
   - □ Not at all

2. I have looked forward with enjoyment to things
   - □ As much as I ever did
   - □ Rather less than I used to
   - □ Definitely less than I used to
   - □ Hardly at all

*3. I have blamed myself unnecessarily when things went wrong
   - □ Yes, most of the time
   - □ Yes, some of the time
   - □ Not very often
   - □ No, never

4. I have been anxious or worried for no good reason
   - □ No, not at all
   - □ Hardly ever
   - □ Yes, sometimes
   - □ Yes, very often

*5 I have felt scared or panicky for no very good reason
   - □ Yes, quite a lot
   - □ Yes, sometimes
   - □ No, not much
   - □ No, not at all

*6. Things have been getting on top of me
   - □ Yes, most of the time I haven't been able to cope at all
   - □ Yes, sometimes I haven't been coping as well as usual
   - □ No, most of the time I have copied quite well
   - □ No, I have been coping as well as ever

*7 I have been so unhappy that I have had difficulty sleeping
   - □ Yes, most of the time
   - □ Yes, sometimes
   - □ Not very often
   - □ No, not at all

*8 I have felt sad or miserable
   - □ Yes, most of the time
   - □ Yes, quite often
   - □ Not very often
   - □ No, not at all

*9 I have been so unhappy that I have been crying
   - □ Yes, most of the time
   - □ Yes, quite often
   - □ Only occasionally
   - □ No, never

*10 The thought of harming myself has occurred to me
   - □ Yes, quite often
   - □ Sometimes
   - □ Hardly ever
   - □ Never

Administered/Reviewed by _____ Date _____

[1]Source: Cox, J.L., Holden, J.M., and Sagovsky, R. 1987. Detection of postnatal depression: Development of the 10-item Edinburgh Postnatal Depression Scale. *British Journal of Psychiatry* 150:782-786.

[2]Source: K. L. Wisner, B. L. Parry, C. M. Piontek, Postpartum Depression N Engl J Med vol. 347, No 3, July 18, 2002, 194-199

Edinburgh Postnatal Depression Scale[1] (EPDS)

Postpartum depression is the most common complication of childbearing.[2] The 10-question Edinburgh Postnatal Depression Scale (EPDS) is a valuable and efficient way of identifying patients at risk for "perinatal" depression. The EPDS is easy to administer and has proven to be an effective screening tool.

Mothers who score above 13 are likely to be suffering from a depressive illness of varying severity. The EPDS score should not override clinical judgment. A careful clinical assessment should be carried out to confirm the diagnosis. The scale indicates how the mother has felt ***during the previous week***. In doubtful cases it may be useful to repeat the tool after 2 weeks. The scale will not detect mothers with anxiety neuroses, phobias or personality disorders.

Women with postpartum depression need not feel alone. They may find useful information on the web sites of the National Women's Health Information Center <www.4women.gov> and from groups such as Postpartum Support International <www.chss.iup.edu/postpartum> and Depression after Delivery <www.depressionafterdelivery.com>.

SCORING

QUESTIONS 1, 2, & 4 (without an *)
Are scored 0, 1, 2 or 3 with top box scored as 0 and the bottom box scored as 3.

QUESTIONS 3, 5-10 (marked with an *)
Are reverse scored, with the top box scored as a 3 and the bottom box scored as 0.

Maximum score: 30
Possible Depression: 10 or greater
Always look at item 10 (suicidal thoughts)

Instructions for using the Edinburgh Postnatal Depression Scale:

1. The mother is asked to check the response that comes closest to how she has been feeling in the previous 7 days.

2. All the items must be completed.

3. Care should be taken to avoid the possibility of the mother discussing her answers with others. (Answers come from the mother or pregnant woman.)

4. The mother should complete the scale herself, unless she has limited English or has difficulty with reading.

[1]Source: Cox, J.L., Holden, J.M., and Sagovsky, R. 1987. Detection of postnatal depression: Development of the 10-item Edinburgh Postnatal Depression Scale. *British Journal of Psychiatry* 150:782-786.

[2]Source: K. L. Wisner, B. L. Parry, C. M. Piontek, Postpartum Depression N Engl J Med vol. 347, No 3, July 18, 2002, 194-199

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