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Original contribution

Prevalence of postpartum depression in a Moroccan sample

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Summary

The aim of the present study was to determine the prevalence and factors associated with post-partum depression among Moroccan mothers. The authors interviewed 144 mothers at 2 and 6 weeks, and at 6 and 9 months after delivery. They used the Mini International Neuropsychiatric Interview (M.I.N.I.) and the Arabic version of Edinburgh Postnatal Depression Scale (EPDS). Using the M.I.N.I., 18.7% met DSM-IV criteria for depressive disorder in the second week after childbirth. Using a cut-off score of 12, the EPDS indicated a sensitivity and specificity of 92% and 96% respectively. Depressive disorder was significantly associated with pregnancy complications, stressful life events during pregnancy, baby's health problems, and poor marital relationship. The subsequent point prevalences were 6.9%, 11.8% and 5.6% respectively at 6 weeks, 6 and 9 months. Postnatal visits were effective in the identification of Moroccan depressed mothers.

Keywords: Postpartum depression; epidemiology; rating scales.

Introduction

The prevalence of postpartum depression, as reported in literature, affects between 10% and 20% of parturients depending on the diagnostic criteria used and the time of symptom onset (O'Hara and Zekoski, 1988; Stamp et al., 1996; Regmi et al., 2002). The clinical symptoms usually appear between 8 and 12 weeks after delivery (Kumar and Robson, 1984; Cox et al., 1993; Benvenuti et al., 1999). There is increasing evidence that postpartum depression decreases the quality of the mother-child interaction, the child's behavioural, emotional and cognitive development (Murray and Cooper, 1997; Dwight and Walker, 1998) as well as the marital relationship (Ballard et al., 1994). Despite its serious consequences, postpartum depression often remains unrecognised.

Postpartum depression has been the subject of an increasing number of publications (Fergerson et al., 2002; Beck, 2002; Wolf et al., 2002; Oates et al., 2004). The majority of these papers are European or North American. In developing countries, few studies have examined the occurrence of depressive disorders during pregnancy and postpartum period (Abou-Saleh and Ghubash, 1997; Patel et al., 2002; Regmi et al., 2002; Chaaya et al., 2002; Rahman et al., 2003).

Ghubach et al. (1997) validated into Arabic the Edinburgh Postnatal Depression Scale (EPDS) and reported a high sensitivity and specificity for screening. Chaaya et al. (2002) used the same version to assess the prevalence of postpartum depression in Lebanon. Morocco is also an Arab and developing country, located in North West Africa with a population estimated at 30 million people. To our knowledge there is no published data concerning the prevalence of postpartum depression in an Arab-African population.

On the other hand, the consistent finding of the epidemiological studies is that the major factors of aetiological importance are largely of a psychosocial nature (Cooper and Murray, 1998). A meta-analysis of 84 studies published in the decade of the 1990s by Beck (2001) revealed thirteen significant predictors of postpartum depression: prenatal depression, self esteem, childcare stress, prenatal anxiety, life stress, social support, marital relationship, history of previous depression, infant temperament, maternity blues, marital

status, socioeconomic status, and unplanned/unwanted pregnancy.

In order to evaluate the prevalence and the factors associated with postpartum major depression in Morocco, we carried out a prospective cohort study on women residing in the metropolitan area of Casablanca.

Subjects and Methods

Setting

The recruitment of subjects for the study was done in the maternal and infantile health unit in a primary healthcare setting in Casablanca. This institution serves an area with a total population of more than 51 000 inhabitants. There are approximately 900 births each year in this area.

The duration of the National Program of Vaccination is 9 months, including a minimum of 5 visits. This program is obligatory in Morocco. All newborns in this region are brought to the unit of maternal and infantile health. We took advantage of these visits to conduct our survey.

Casablanca is Morocco's largest city (population exceeding 5 million people). Inhabitants of Casablanca come from diverse backgrounds with many individuals recently moving in from rural areas. In addition, middle and upper class professionals have also moved to this city because it is the country's main centres of trade and industry. Neighborhoods and housing range from slums to villas and high-quality apartments inhabited by the wealthy elite. The majority of people remain low-income, however, and many live in difficult conditions.

Subjects

The sample consisted of all women who had given birth during two months (January and February 1999) and who were residing in this region at the time of delivery. An informed consent was obtained from each participant before enrolment in the study. All solicited mothers consented to participate.

Assessment

Participants were recruited at their first postnatal visit 15 to 20 days after delivery and subsequently reassessed in the 6^{th} week, as well as in the 6^{th} and 9^{th} month after delivery.

At baseline, during the first postnatal visit, we collected sociodemographic (age, employment status, marital status, education level), medical, especially obstetrical (desire of offspring, parity, gestational age at delivery, mode of delivery, newborn gender) and psychiatric data in a semi-structured manner. The quality of marital relationship and partner support was also evaluated. We also used:

1. The Mini International Neuropsychiatric Interview (MINI) (Sheehan et al., 1998): a brief diagnostic structured interview designed to generate diagnosis for the main Diagnostic and Statistical Manual (DSM IV) axis I disorders (APA, 1994). The Moroccan Colloquial Arabic version of the M.I.N.I. was used (Kadri et al., 2005).
2. The Edinburgh Postnatal Depression Scale: The EPDS is a 10-item self-report scale, specifically designed to screen for postnatal depression in community samples (Cox et al., 1987). Each item is scored on a 4-point scale (from 0 to 3), the minimum and maximum total scores being 0 and 30, respectively. The scale assesses the intensity of depressive symptoms present within the previous seven days.

   The EPDS was used on each of the four visits. When the subjects were unable to read, the questions were read by the interviewer, as suggested by Cox et al. (Cox et al., 1987). We used the Arabic version of EPDS, translated and validated by Ghubash et al. (1997).
3. Paykel Life Events Inventory (Paykel, 1983): we used this instrument in order to identify stressful life events during the pregnancy and in the post-partum period. The French version (Ansseau and Lamberty, 1987) was used and this was translated into the patient's preferred tongue.

   All subjects were recruited and evaluated by a single interviewer (M.A.).

Statistical analysis

The data were analysed using the sixth version of the Epi Info Software (Epi6.04dfr).

In order to evaluate the factors associated with postpartum depression, the sample was divided on two groups, depressed and non-depressed, according to the M.I.N.I. in the second week after childbirth. Analysis of variance (ANOVA) and t test were used for group comparisons. Chi-square and Fisher's exact test were used for analysis of categorical data. Level of significance was set at 0.05.

The validity of the EPDS was measured against the major depressive disorder generated by the M.I.N.I. using sensitivity, specificity, and positive predictive value.

Results

Characteristics of the sample

A total of 144 women were recruited for the study. All of them were married. The mean age was 30.3 years (SD = 6.1) ranging from 18 to 44 years. The majority of mothers (55.6%) had achieved either elementary or secondary levels of education and 88.8% were housewives. Table 1 summarizes the characteristics of the study sample relating to sociodemographic and obstetrical data and newborn characteristics. Regarding the course of pregnancy, 8 (5.5%) mothers reported complications during pregnancy with 5 cases of threat of abortion. Among 113 subjects who attended antenatal care, 51 (45.1%) consulted regularly the maternal and infantile health program in the primary care setting, 56 (49.6%) consulted regularly general practitioners and only 6 subjects (5.3%) consulted a gynaecologist.

The mean age of partners was 37.5 years (SD = 5.6) ranging from 23 to 62 years. The mean difference age

Table 1. Characteristics of the sample

Characteristics	N	%
Sociodemographic		
Age		
<25	30	20.8
25–35	85	59.0
>35	29	20.1
Education level		
Illiterates	56	38.9
Elementary	39	27.1
Secondary	41	28.5
High	8	5.6
Employment		
Yes	16	11.1
Number of children		
1	51	35.4
2–3	48	33.3
>3	45	31.2
Obstetrical		
Parity		
Primiparous	51	35.4
Wanted pregnancy		
Yes	113	78.4
Planned pregnancy		
Yes	83	57.6
Antenatal care attendance		
Yes	113	78.4
Delivery mode		
Vaginal	128	88.8
Caesarean	16	11.1
Assistance at delivery		
Unassisted (Home)	42	29.2
Public hospital	79	54.9
Private clinic	23	16.0
Newborn		
Sex		
Female	76	52.8
Male	68	47.2
Health status		
Good health	141	97.9
Minor illness	3	2.1
Breast-feeding		
Yes	133	92.4

between women and their husbands was 7.28 years (SD = 5.13). Only 20.8% were illiterate and 73.6% had achieved either elementary or secondary levels of education.

The mean duration of marriage was 7.53 years (SD = 6.15) ranging from 1 to 24 years, and the mean age of women at marriage was 22.7 years (SD = 5.1) [range, 15–38 years]. Forty-two women (29.1%) were living with their husband's family (traditional large family).

The majority of participants (82.6%) reported a good quality of marital relationship; however 25 (17.3%) of them described this relation as poor with lack of support and occurrence of verbal violence.

Point prevalence of postpartum depression

Using the structured instrument, the Mini International Neuropsychiatric Interview, 27 mothers (18.7%) met DSM-IV criteria for postpartum depression at the first assessment (two to three weeks after childbirth).

The mean EPDS score was 7.05 (SD = 5.5) [minimum 0, maximum 26]. The analysis of the psychometric properties of the different cut-offs points, according to the diagnosis of depressive disorder generated by the MINI, suggests that a score of 12 is the optimal cut-off score to detect the presence of postpartum depression (Table 2). Twenty-nine mothers (20.1%) had an EPDS score higher than 12.

The prevalence at 6 weeks after delivery was 6.9% according to the M.I.N.I. At the sixth month, the prevalence increased to 11.8% and decreased to 5.6% in the ninth month.

Factors associated with postpartum depression

We compared the group of depressed mothers, according to the diagnosis generated by the MINI in the second week after childbirth, to the non-depressed group.

We first tested associations between postpartum depression and sociodemographic factors. No significant differences were found between the two groups.

We examined potential relationship associating obstetrical factors with postpartum depression. Depressed mothers reported significantly more complications of pregnancy ($p<0.01$), a baby's health problem ($p<0.02$) and the stressful life-events during pregnancy ($p<0.0001$). Stressful life-events were primarily related to financial and social difficulties.

One-third (33.3%) of depressed mothers reported a poor marital relationship with a lack of partner's support and verbal violence during pregnancy and early postpartum period. On the other hand, only 13.6% of non-

Table 2. Psychometric properties of the Edinburgh Postnatal depression Scale in detecting postpartum depression according to the M.I.N.I.

Cut-off score	Sensitivity	Specificity	Positive predictive value
≥ 10	1.0	0.88	0.65
≥ 11	0.96	0.95	0.83
≥ 12	0.92	0.96	0.86
≥ 13	0.85	0.97	0.88

Table 3. Factors associated with postpartum depression

Factor	Depressed mothers (n = 27)	Non-depressed mothers (n = 117)	p
Sociodemographic			
Age (years, SD)	32.2 ± 6.8	29.8 ± 5.9	0.06
Education level (%)			
Illiterates	40.7	38.4	0.8
Employment (%)			
Yes	11.1	11.1	1.0
Number of children	1.9 ± 1.7	1.3 ± 1.4	0.5
Obstetrical			
Parity (%)			
Primiparous	29.6	36.7	0.4
Wanted pregnancy (%)			
Yes	70.3	80.3	0.2
Planned pregnancy (%)			
Yes	59.2	57.2	0.8
Antenatal care attendance (%)			
Yes	85.1	76.9	0.3
Delivery mode (%)			
Vaginal	88.8	88.8	1.0
Caesarean	11.1	11.1	
Assistance at delivery (%)			
Assisted	74.0	70.0	0.8
Complications/pregnancy (%)			
Yes	18.5	3.4	0.01
Newborn			
Sex (%)			
Female	48.1	53.8	0.5
Male	51.8	46.1	
Health status (%)			
Good health	88.8	99.1	0.02
Minor illness	11.1	0.8	
Breast-feeding			
Yes	88.8	93.1	0.4
Life events during pregnancy			
Yes	70.3	22.2	10^{-4}
Marital relationship			
Poor	33.3	13.6	0.02

depressed mothers reported a poor marital relationship ($p < 0.02$) (Table 3).

Discussion

The findings of the present study indicate a high prevalence of postpartum depression among a sample of Moroccan mothers: 18.7% using a structured diagnostic interview (M.I.N.I.) and 20.1% according to the EPDS two weeks after childbirth. This prevalence is in agreement with the results of the study of Abou-Saleh and Ghubash (1997), who reported that 18% of mothers assessed on day 7 after delivery were depressed according to the EPDS. Their study included 95 women admitted for childbirth to the New Dubai Hospital, United Arab Emirates. In Lebanon, another Arabic country, Chaaya et al. (2002) reported an overall prevalence of 21%. The previous studies, including the present survey, used the same version of the EPDS.

In other developing countries, high rates of postpartum depression were reported. Patel et al. (2002) detected a depressive disorder in 23% of mothers at 6–8 weeks after childbirth in Goa, India. A similarly high prevalence was reported in a South African peri-urban survey (34.7%) (Cooper et al., 1999). On the other hand, the prevalence of postpartum depression in our survey falls in the upper limits of studies conducted in European and North American countries (Da Costa

et al., 2000; Bergant et al., 1999; Huang and Mathers, 2001; Josefsson et al., 2001).

The present study did not find a relationship between postpartum depression and sociodemographic factors. Da Costa et al. (2000) reported no association between depressed mood during the postpartum and demographic factors such as age, education, income and number of children. Other studies confirmed these findings (Gotlib et al., 1989; Terry et al., 1996; Georgiopoulos et al., 1999).

Several obstetric factors were recognized to be associated with postpartum depression such as complications during pregnancy and early postpartum or difficult labour (Tamaki et al., 1997; Johnstone et al., 2001; Josefsson et al., 2002). Mothers who experienced complications during pregnancy in our study reported significantly more depressive symptomatology ($p < 0.01$). However, unassisted delivery at home and mode of delivery (vaginal versus caesarean) did not represent risk factors. Other studies reported no association with postpartum depression and any obstetric factor (Bergant et al., 1999; Johnstone et al., 2001; Nielson Forman et al., 2000). The most commonly cited variables associated with the development of postpartum depression include marital conflict and lack of partner's support (Ghubash and Abou-Saleh, 1997; Johnstone et al., 2001; Whiffen, 1988; O'Hara et al., 1991; Gotlib et al., 1991) and childcare related stressors such as infant's health problems (Ghubash and Abou-Saleh, 1997; Tamaki et al., 1997; Gotlib et al., 1991). Depressed mothers in our sample reported more frequently these two factors.

The Arabic version of the EDPS indicated good psychometric properties among Moroccan mothers. Ghubash et al. (1997) reported that the sensitivity and specificity of this version were respectively 73% and 90% using a cut-off score of 12; and 91% and 84% with a cut-off score of 10. In our study, with a cut-off score of 12, the sensitivity, specificity and positive predictive value were 92%, 96% and 86%. These findings suggest that a cut-off score of 12 is optimal for screening in our population. On the other hand, in our study the sensitivity and specificity value were 100% and 88% respectively with a cut-off score of 10.

The EPDS has demonstrated effectiveness as a screening tool for postpartum depression in the maternal and infantile health units in Moroccan primary healthcare settings at the time of postnatal visits, and it can help in the identification of Moroccan women at risk for depression.

Several studies suggested that the EPDS can be used to identify mothers presenting a post-partum depression by health care providers (primary care physicians, paediatricians, midwives, and public health nurses) (Georgiopoulos et al., 1999; Regmi et al., Yamashita et al., 2000, 2002; Watt et al., 2002; Chaudron et al., 2004; Dennis, 2004). But some difficulties and resistance were encountered when the instrument was used for screening (Tam et al., 2002). Women had a clear preference for talking about how they felt, rather than filling out a questionnaire (Shakespeare et al., 2003).

Our study has some limitations. First, the sample size was relatively small. The assessment of depressive disorders was made only in the postpartum period, and not during pregnancy. In fact, previous studies indicated that a prepartum depressed mood was a great predictor of developing postpartum depression (Da Costa et al., 2000; Terry et al., 1996). We had chosen to include only mothers who came for the postnatal visit because only a minority of pregnant women took part in prenatal visits in the Moroccan context. In our sample, 45.1% of mothers who attended antenatal care, corresponding to 35.4% of the whole sample, visited regularly the maternal and infantile health unit in the primary care setting. On the hand, previous reports suggested that women who are depressed are less frequent clinic attenders than women who are well (Hearn et al., 1998).

In conclusion, our study showed a high prevalence of post-partum depression similar to the results retrieved in studies conducted in Arab countries. Four factors associated with postpartum depression were identified: pregnancy complications, stressful life events during pregnancy, baby's health problems, and poor marital relationship. The use of EPDS was effective in screening for postpartum depression among women interviewed.

In the future, studies concerning the acceptability and the implantation of routine screening for post-partum depression at the Moroccan maternal and infantile health unit in primary healthcare settings in Morocco must be conducted.

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