

Prevalence and Factors Associated with Postpartum Depression among Women Attending Primary Health Care Centers in Al-Madina, Saudi Arabia

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Abstract Clinical picture and triggering factors for postpartum depression (PPD, postnatal depression) may vary across culturally diverse women with different causes e.g. lack of breast-feeding and consanguinity. The reported incidence of PPD among samples of Arabic women ranges from 10% to 37%. In this study, we investigated a sample of mothers (n=216) attending the primary health care centers in Al-Madina, Saudi Arabia. Data acquisition was done via a cross-sectional design. Ethical committee approval was taken and participation in the study was optional. Herein, we report that PPD prevalence in this sample was 19.4% using the Arabic version of the Edinburgh Postnatal Depression Scale (EPDS) with a cut-off score of ≥ 12 . Our study included mothers of different age groups: <20 years, 20-30 years, 30-40 years and >40 years. Majority of investigated women were in the age group 20-30 years (60.2%, n= 130). Predictors of PPD were related to parity and gravidity. Primiparous women were at almost double-folded risk of getting PPD compared to multiparous women (adjusted OR=1.91; 95% CI: 1.01-3.38). Women who delivered by normal vaginal method were more likely to have PPD compared to those delivered by cesarean section (Adjusted OR=3.11; 95% CI: 1.35-7.16). However, PPD was not significantly associated with the presence of mothers of delivering women during their confinement. Vast majority of investigated women had a regular marital life (90.6%, n=196) i.e. not widows or divorced and were house wives (79.6, n = 172). There was no significant association between PPD and women's age or women's family income. Compared to non-working women, those working were at slightly higher risk for PPD. However, this was also not statistically significant. Likewise, mothers' history of depression was not associated with having postnatal depression. Moreover, PPD was not associated with regular marital status or the level of education. The relatively low number of investigated cases in our study may be limitation. More future research studies are warranted.

Keywords: Postpartum depression, prevalence, risk factors, Al-Madina

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1. Introduction

The term postpartum depression (PPD) is extensively utilized in recent years although its definition is still variable. PPD is defined in different ways depending on the source, and the diagnosis of PPD. PPD is related to the degree of the depression and the time duration between the start of depression and labour [1]. PPD is a mood disorder that begins after childbirth and usually lasts beyond six weeks. It is also termed postnatal depression [2]. The onset of PPD tends to be gradual and may persist for many months, or develop into a second bout following the next pregnancy [1]. PPD symptoms generally begin within 48 hours of delivery, peak at about 3 to 5 days [3], and lasts around 2 weeks. It may last up to several months or even a year [4]. Depression constitutes a big load among psychiatric illnesses needing psychiatric care. Depression may be the second highest health problems in the near future [5].

Postnatal depression is an important category of depression. Currently, there is a large body of evidence proving that postnatal depression has a substantial impact on the mother, husband [6], family [7], and mother-baby interactions [8]. Furthermore, postnatal depression affects the future cognitive and emotional development of newborns [9], especially when PPD occurs early [10]. Published studies provides strong evidences that PPD is strongly related to long-term emotional, cognitive and intellectual problems in children [11,12]. Studies from South East Asia and Africa proved that mothers' depression is associated with impaired infant's health and nutrition [13,14,15,16]. Mothers' fears regarding child protective services and separation from the baby may increase their anxiety regarding harming themselves or their babies [17].

The etiology of PPD is still obscure although several factors may play a role e.g. social, psychological and biological factors may involved. Psychosocial risk factors include lack of social support, recent negative life events, and a history of depression [18,19] have been strongly associated with PPD. Women who suffered from depression during pregnancy were found to have a five times higher risk of developing PPD [19]. Likewise, women with anxiety during pregnancy were found to have a three times higher risk for PPD [20]. In addition, PPD is postulated to be due to sudden hormonal withdrawal after delivery or poor response to circulating oxytocin hormone that usually enhances mother-infant attachment [21]. Less than 50% of cases of PPD are detected by primary healthcare professionals in routine clinical practice [22].

PPD occurs during the first postpartum year and is manifested by helplessness, loss of energy, prolonged guilty sensation, lack of joy, decreased concentration, depressed mood, social withdrawal and lack of interest in self-care. PPD symptoms also include a low sense of self-worth, changes in appetite, sleep pattern disturbances, and suicidal ideation. Physical symptoms also include exhaustion, fatigue, changes in appetite, and sleep disorders [23,24,25]. Women suffering from PPD exhibit decreased interest in health promotion behaviors with

suppressed emotional, physical, and psychological status [26]. The present study aims at investigating the prevalence and impact of personal factors upon PPD in women attending primary health care centers in Al-Madina (Al-Madinah), Saudi Arabia.

2. Methodology

Our study was performed in Al-Madinah, Saudi Arabia [27]. Al-Madinah is the second most important Islamic pilgrimage destination after Makkah. There are 48 primary health care centers in Al-Madina that introduce many health services to mothers and their children. Women attending the primary health care centers for immunizing their babies (aged one year or less) were considered in this study.

The population size (total number of mothers attending four primary health care clinics in one month) was 2510 mothers. The calculated sample size (using Epi info) was 224 mothers. This is a cross-sectional study that included women attending primary health care centers in Al-Madina. The study was performed over two successive years 2019-2020.

2.1. Data Collection Methods

All woman were directly met by the first author during her visit for vaccinating her baby. The researcher used a questionnaire obtained from a previously published study. The tool consists of two sections: The first part is the Edinburgh Postnatal Depression Scale (EPDS) that was used to investigate PPD symptoms. EPDS included 10 points that were put to scan PPD criteria in community samples [28]. EPDS scale validates the intensity of depressive clinical picture. Each item is scored on a 4-point rate (from 0 to 3 reflecting increased intensity of symptoms) [28]. The minimum and maximum total scores are 0 and 30, respectively, in which 0 is the minimum depression score and 30 is the maximum depression score [28]. EPDS was translated into many languages as Arabic, mother tongue of participants) and validated for use in scanning depression symptoms. This assists health workers to detect postnatal depression [28].

The Arabic version of the EPDS was utilized in this study. Using a cut-off score of 12 out of 30, the specificity and the sensitivity of EPDS scale were 93% and 73%, respectively [28]. In this study, a cut-off score of ≥ 12 was used.

2.2. Inclusion Criteria:

- All females in their postnatal period (one year or less were included)
- From all nationalities.

There were no exclusion criteria.

2.3. Data Entry and Analysis

Statistical analysis was performed using SPSS software version 20.0. Categorical variables were used using a suitable frequency format. Crude and adjusted odds ratios

were calculated. Results were presented in the form of crude and adjusted odd ratios (ORs) and their 95% confidence interval (CI) where 95% CI that does not include 1 were considered statistically significant.

2.4. Ethical Approval for Performing the Study

A prior ethical committee approval was gained from the general supervisor of the postgraduate family medicine training program in Al-Madinah. Approval by the regional ethical committee was also gained. Participation in the study was optional and verbal consent was obtained from all women participating in this study. Participants' confidentiality was guaranteed.

Investigated variables observed in the study included:

- Maternal age
- Marital status
- Educational level
- Working
- History of depression
- Presence of her own mother (grandmother) during puerperium
- Monthly income

Their socio-demographic characteristics are presented in Table 1. The age of 130 women (60.2% of investigated

mothers) ranged from 20 to 30 years while that of 62 mothers (28.7%) ranged between 31 and 40 years. Majority of them (n= 196, 90.6%) were married. The remainder of women were either divorced (n=10, 4.6%) and widows (n=10, 4.6%). Slightly less than a third of them (n=66, 30.2%) were graduated from university whereas 10.2% (n=22) were illiterate. Most of them (79.6%, n=172) were house wives whereas the remaining 44 women (20.4%) were workers.

2.5. Prevalence of Postpartum Depression in Al-Madina, Saudi Arabia

As indicated by Figure 1, PPD was present among 19.4% (n=42) of the investigated women who attended primary health care centers during the whole period of the study conduction.

2.6. Impact of Monthly Income on Postpartum Depression

As shown in Figure 1, more than one third of the investigated women (n= 82, 38%) had a monthly income of more than 10000 SR/month whereas 15.7% of them (n=34) had a monthly income less than 2000 SR/month.

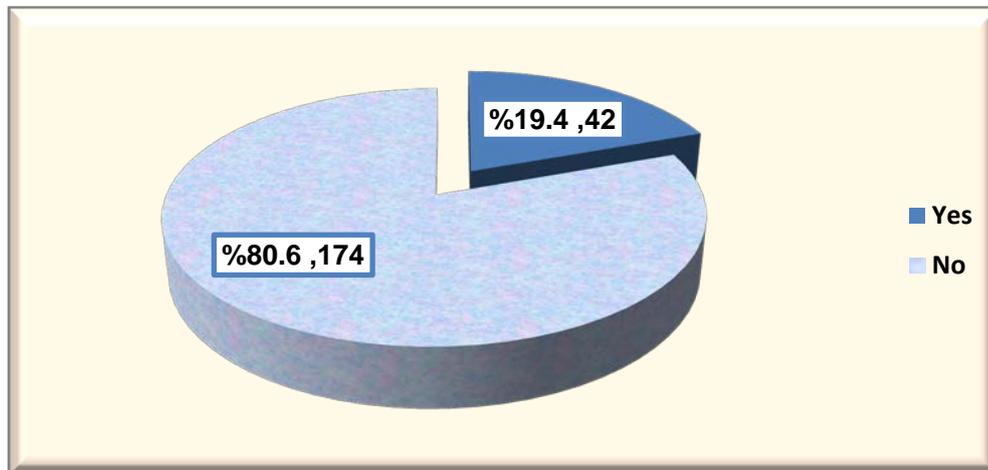


Figure 1. Prevalence of postpartum depression among women who attended primary health care centers in Al-Madina, Saudi Arabia

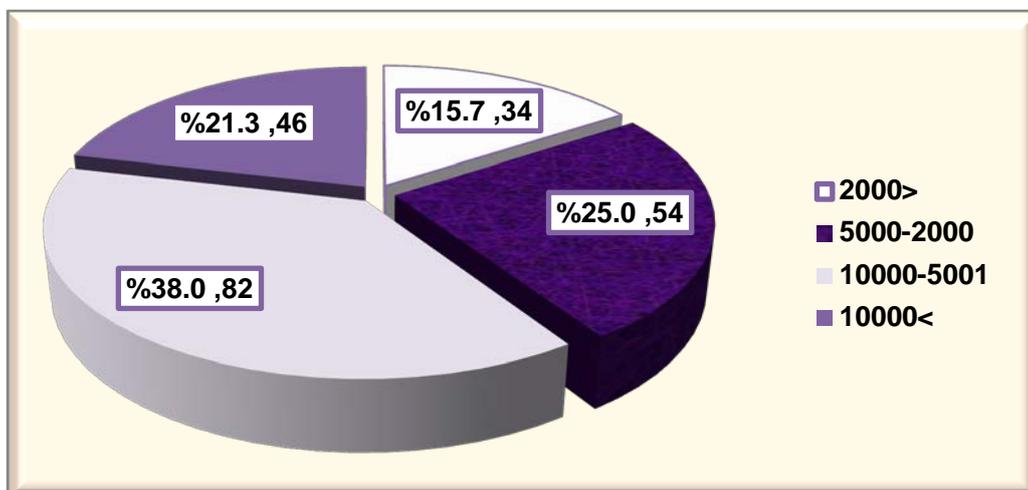


Figure 2. Monthly income in SR of women who attended primary health care centers in Al-Madina, Saudi Arabia

Women`s family income was not significantly associated with PPD.

Then we studied other risk factors associated with PPD to delineate any possible significance or important association.

2.7. Impact of Women`s Age on Postpartum Depression

As illustrated in Table 2, women in the age group 20-30 years were at almost double risk for PPD compared to those aged less than 20 years. However, this difference was not statistically significant (crude OR=2.4; 95% CI: 0.52-11.03).

Table 1. Socio-demographic characteristics of the study population (n=216)

	Frequency	Percentage
Age in years		
<20	18	8.3
20-30	130	60.2
31-40	62	28.7
>40	6	2.8
Marital status		
Married	196	90.6
Divorced	10	4.6
Widow	10	4.6
Educational level		
Illiterate	22	10.2
Primary school	16	7.4
Intermediate school	10	4.6
Secondary school	102	47.2
University school	66	30.2
Working status		
Working	44	20.4
House wife	172	79.6

Table 2. Association between PPD and women`s age

Age (years)	Postpartum depression		Crude OR	95% CI
	Yes N (%)	No N (%)		
<20 (n=18) ^a	2 (11.1)	16 (88.9)	1.0	----
20-30 (n=130)	30 (23.1)	100 (76.9)	2.40	0.52-11.03
>30 (n=68)	10 (14.7)	58 (85.3)	1.38	0.27-6.94

^a Reference category, OR: Odds ratio, CI: confidence interval

2.8. Impact of Marital Status on Postpartum Depression

As shown in Table 3, mother`s marital status was not significantly related to the development of PPD.

Table 3. Association between PPD and women`s marital status

Marital status	Postpartum depression		Crude OR	95% CI
	Yes N (%)	No N (%)		
Married (n=196) ^a	38 (19.4)	158 (80.6)	1.0	----
Divorced/widowed (n=20)	4 (20.0)	16 (80.0)	1.04	0.33-3.29

^a Reference category, OR: Odds ratio, CI: confidence interval.

2.9. Impact of Educational Level on Postpartum Depression

Table 4 demonstrates that women`s educational level was not significantly related to the development of PPD.

Table 4. Association between PPD and women`s educational level

Educational level	Postpartum depression		Crude OR	95% CI
	Yes N (%)	No N (%)		
Low (n=38) ^a	8 (21.1)	30 (78.9)	1.0	----
Intermediate (n=112)	20 (17.9)	92 (82.1)	0.82	0.33-2.04
High (n=66)	14 (21.2)	52 (78.8)	1.01	0.38-2.81

Low: illiterate/primary, Intermediate: Intermediate/secondary, High: University, ^a Reference category, OR: Odds ratio, CI: confidence interval

2.10. Impact of Women`s Working Status on Postpartum Depression

Compared to non-working women, working mothers were at slightly higher risk for PPD. However, this was also not statistically significant as seen in Table 5 (crude OR=1.78; 95% CI: 0.82-3.84).

Table 5. Association between PPD and women`s working status.

Working status	Postpartum depression		Crude OR	95% CI
	Yes N (%)	No N (%)		
Not working (n=172) ^a	30 (17.4)	142 (82.6)	1.0	----
Working (n=44)	12 (27.3)	32 (72.7)	1.78	0.82-3.84

^a Reference category, OR: Odds ratio, CI: confidence interval.

2.11. Impact of History of Depression on Postpartum Depression

As shown in Table 6, mother`s past history of depression was not related to the development of PPD.

Table 6. Association between PPD and women`s history of depression

History of depression	Postpartum depression		Crude OR	95% CI
	Yes N (%)	No N (%)		
No (n=170) ^a	32 (18.8)	138 (81.2)	1.0	----
Yes (n=46)	10 (21.7)	36 (78.3)	1.20	0.54-2.66

^a Reference category, OR: Odds ratio, CI: confidence interval.

2.12. Impact of Mother`s Presence during Confinement on Postpartum Depression

As seen in Figure 3, more than half of the women (53.7%) reported presence of their own mothers during confinement. That was not statistically significant in relation to PPD.

2.13. Logistic Regression Analysis

Results of logistic regression analysis revealed that primiparous women were at almost double-folded risk of getting PPD compared to multiparous women (adjusted OR=1.91; 95% CI: 1.01-3.38). Women who delivered by normal vaginal method were more likely to have PPD compared to those delivered by cesarean section (Adjusted OR=3.11; 95% CI: 1.35-7.16).

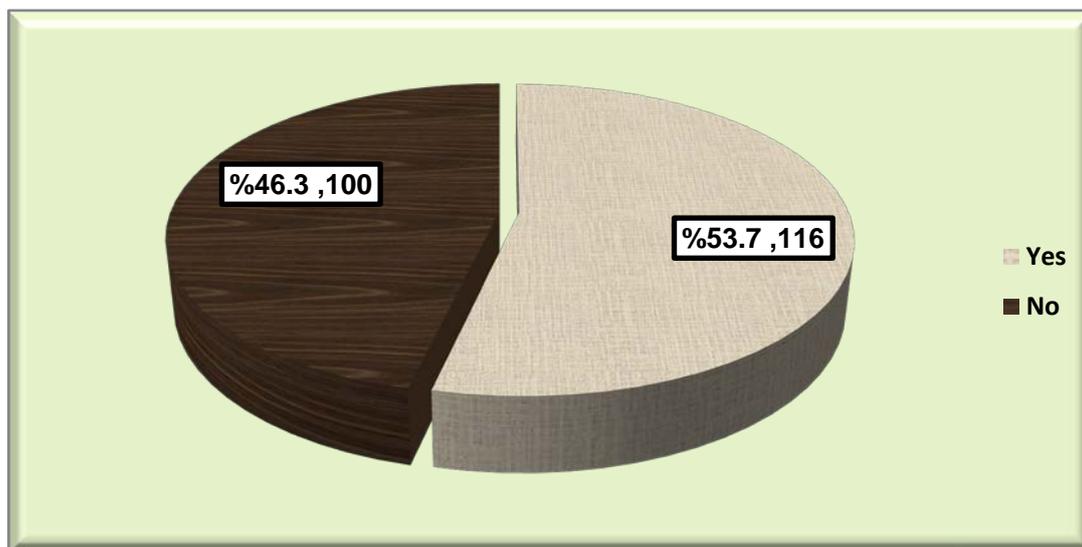


Figure 3. Shows that PPD was not significantly associated with the presence of mothers of delivering women during their confinement

Table 7. Predictors of postpartum depression among women who attended primary health care centers in Al-Madina

	B	SE	Adjusted OR	95%CI
Parity				
Multiparous ^a			1.	---
Primiparous	0.747	0.355	1.91	1.01-3.38
Mode of delivery				
CS ^a			1.0	---
Normal vaginal	1.135	0.425	3.11	1.35-7.16

^a Reference category, B: Slop, SE: Standard error.

3. Discussion

Clinical picture and risk factors for development of PPD are variable in women from different cultures. Further future research is needed for evaluating these differences [29] e.g. consanguinity (marriage to first or second cousins) and lack of breast-feeding were reported as potential risk factors for PPD [30]. Reported PPD incidence among Arabic women was from 10% to 37% [31]. In a sample of 125 women living in the United Arab Emirates, 20% of investigated mothers exhibited moderate to high levels of PPD symptoms. Participating mothers having increased symptoms of PPD had lack of breastfeeding, poor relationships with their mother-in-law and negative body image [32].

In the present study, we report a prevalence of 19.4% of PPD (n= 42) (Figure 1) using the Arabic translation EPDS with a cut-off score of ≥ 12 . In another Arabic study conducted in Bahrain kingdom using the same tool and cut-off point, a higher PPD prevalence was reported (37.1%) [33]. This difference could be partially attributed to the difference of the point of time applied in our study versus their study as they recruited women who were in the postnatal period and regularly visiting the 8-week child and mother clinic at primary health care centers. Our study included women who attended the primary health care centers for immunization of their babies aged one year or less.

Comparing our data with different published studies investigating PPD in other countries was difficult due to

differently used tools (standardized diagnostic tools, screening tools, different cut-off points of the same tools, different time points and the cultural issues) [14,34,35,36]. In spite of difficult PPD assessment tools, PPD prevalence and symptoms in our study were comparable to many reported studies in nearby countries. In a study In Emirates enrolling 95 mothers in Dubai and using the Present State Examination (PSE) assessment, PPD prevalence was 15.8% [37]. In Morocco, the PPD prevalence was 18.7% (at 2 weeks postpartum) using the Mini International Neuropsychiatric Interview (MINI). Moreover, PPD prevalence was 20.1%, using a cut-off score of 12 with the EPDS [38]. Moreover, Chaaya et al. in Lebanon reported a PPD prevalence rate of 21% (using an EPDS score of 12/13 at 4-5 months postpartum). Interestingly, PPD had resolved spontaneously after 4 months [39]. In turkey, PPD prevalence was 31.4% among all the mothers at six weeks postpartum (with a cut-off value of ≥ 13 using EPDS) [40].

Our study included mothers of different age groups: <20 years, 20-30 years, 30-40 years and >40 years. Majority of investigated women were in the age group 20-30 years (60.2%, n= 130) (Table 1). Vast majority of investigated women are currently married (90.6%, n=196) (Table 1) i.e. not widows or divorced. Also, majority of investigated women are house wives (79.6, n = 172) (Table 1).

Our data revealed also that there was no association between PPD and women's age (Table 2) and so was women's family income that was not significantly associated with PPD (Figure 2).

Compared to non-working women, those working were at slightly higher risk for depression. However, this was also not statistically significant (Table 5). Likewise, mothers' history of depression was not associated with having postnatal depression (Table 6). This is quite similar to what Al Dallal and Grant had reported in Bahrain kingdom [33]. Likewise, Ohara and Swain reported no association between a history of depression and postnatal depression [34]. Our study did not report any significant relationship between history of depression and PPD symptoms on the contrary of other studies [39,40,41,42].

In this study, PPD was not related to regular marital status (Table 3) or educational level (Table 4), which contradicts other reports from Canada and Lebanon that reported a relationship between decreased educational level and risks of developing PPD [39,42,43]. However, the number of investigated cases in our study may be a limitation that encourages increasing the sample in the future to show that more clearly. Educational levels may be directly associated with household income (Figure 2), which in turn may affect the women's concerns about the costs of taking care of the infants. However, in Saudi Arabia, the primary care provider of the family is considered to be the husband and level of education is not necessarily related to household income. Additionally, this study found no significant relationship between PPD and family income which also conflicts with the results of Lanes et al. [43] and Tannous et al. [44].

Importantly in this study, primiparous women were at almost double-folded risk of getting PPD compared to multiparous women (adjusted OR=1.91; 95% CI: 1.01-3.38). Women who delivered by normal vaginal method were more likely to have PPD compared to those delivered by cesarean section (Adjusted OR=3.11; 95% CI: 1.35-7.16) (Table 7). In the current study, the support offered by participants' mothers (grandmothers) was examined. No significant association with EPDS score ≥ 12 was found when grandmothers identified as a provider of support were present. Whether this perception was a reflection of reality or a manifestation of depressive symptoms could not be determined in this study. However, this study did not confirm such finding. However, PPD was not significantly associated with the presence of mothers of delivering women during their confinement (Figure 3).

Despite many limitations, our study findings may carry some importance in confirming the presence and prevalence of PPD in Al-Madina, Saudi Arabia. We declare herein that there were some limitations that faced our study. Data acquisition was done via a cross-sectional design. The EPDS screening test needs diagnostic confirmation through structured or semi-structured interviews [45]. Thus, accurate conclusions may not be got smoothly. The net PPD prevalence was limited to women visiting the primary health care centers. Hence, generalizing these results should be taken carefully. Finally, our study investigated mothers during the first postpartum year where antenatal depression was assessed by self-report without prior formal assessments done during pregnancy.

4. Conclusion

In conclusion, our data confirms that PPD is a relatively common psychiatric disorder that afflicts about one fifth of women in Al-Madina. This rate is comparable to those reported in other regional studies. Spontaneous vaginal delivery and primiparous status were predictors and triggers of PPD.

5. Recommendations

Our study recommends the following:

1. More effort and resources should be provided for better prevention and treatment programs of PPD in Al-Madina.
2. More research should be done for better enrollment of women during the antenatal period.
3. Saudi health authorities and physicians should be aware of the high prevalence rate and risk factors of PPD to protect mothers.
4. More prevalence studies should be performed in Saudi Arabia and should include larger samples of women. Future studies are better to be performed even in resource-poor settings.
5. Future studies should also be performed to validate EPDS and determine the appropriate cut off values.
6. Screening for depression in late pregnancy is strongly recommended to detect women at risk of PPD.
7. More qualified and skilled medical professionals should be ready to deal with PPD in cooperation with the psychiatry physicians.

Conflict of interest

The authors declare that there is no conflict of interest.

References

- [1] American Psychiatric Association. Postpartum onset specifiers. In: Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition. Washington, DC: American Psychiatric Association; 2000: 386-387.
- [2] Hirst KP, Moutier CY. Postpartum major depression. *Am Fam Physician*. 2010 Oct 15; 82(8): 926-33
- [3] Cohen LS. Gender-specific considerations in the treatment of mood disorders in women across the life cycle. *J Clin Psychiatry*. 2003; 64(Suppl 15): 18-29.
- [4] Miller LJ. Postpartum depression. *JAMA*. 2002; 287: 762-765.
- [5] Murray C, Lopez A. The global burden of disease: a comprehensive assessment of mortality and disability from diseases, injuries, and risk factors in 1990. Boston, MA: Harvard School of Public Health on behalf of the World Bank; 1996.
- [6] Lovestone S, Kumar R. Postnatal psychiatric illness: the impact on partners. *Br J Psychiatry* 1993; 163: 210-6.
- [7] Boath EH, Pryce AJ, Cox JL. Postnatal depression: the impact on the family. *J Reprod Infant Psychol* 1998; 16: 199-203.
- [8] Murray L, Fiori-Cowley A, Hooper R, Cooper P. The impact of postnatal depression and associated adversity on early mother-infant interactions and later infant outcome. *Child Dev* 1996; 67: 2512-26.
- [9] Murray L, Sinclair D, Cooper P, Ducournau P, Turner P, Stein A. The socioemotional development of 5-year-old children of postnatally depressed mothers. *J Child Psychol Psychiatry* 1999; 40: 1259-71.
- [10] Cogill S, Caplan H, Alexandra H, Robson K, Kumar R. Impact of maternal postnatal depression on cognitive development of young children. *BMJ* 1986; 292: 1165-7.
- [11] Murray J, Cooper PJ. The impact of postpartum depression on child development. *Aetiological Mechanisms in Developmental Psychopathology*. Oxford University Press, Oxford, 2004.

- [12] Earls MF; Committee on Psychosocial Aspects of Child and Family Health American Academy of Pediatrics Incorporating recognition and management of perinatal and postpartum depression into pediatric practice. *Pediatrics* 2010; 126: 1032-1039.
- [13] Patel V, Rahman A, Jacob KS, Hughes M. Effect of maternal mental health on infant growth in low income countries: new evidence from South Asia. *BMJ* 2004; 328: 820-823.
- [14] Rahman A, Iqbal Z, Bunn J, Lovel H, Harrington R. Impact of maternal depression on infant nutritional status and illness: a cohort study. *Arch Gen Psychiatry* 2004; 61: 946-952.
- [15] Patel V, DeSouza N, Rodrigues M. Postnatal depression and infant growth and development in low income countries: a cohort study from Goa, India. *Arch Dis Child* 2003; 88: 34-37.
- [16] Adewuya AO, Ola BO, Aloba OO, Mapayi BM, Okeniyi JA. Impact of postnatal depression on infants' growth in Nigeria. *J Affect Disord* 2008; 108: 191-193.
- [17] Milne V. Postpartum depression makes headlines: celebrities talk about postpartum depression. *Canadian Living.com*. Available <http://canadianliving.com/CanadianLiving/client/en/Health/DetailNews.asp?idNews=232682&idSM=318>. Accessed on April 13, 2006.
- [18] Dennis CL. Preventing and treating postnatal depression. *BMJ*. 2009; 15; 338: a2975.
- [19] Hearn G, Iliff A, Jones I, et al. Postnatal depression in the community. *Br J Gen Pract*. 1998; 48(428): 1064-2066.
- [20] Fisher JR, de Mello MC, Izutsu T, Tran T. The Ha Noi Expert Statement: recognition of maternal mental health in resource-constrained settings is essential for achieving the Millennium Development Goals. *Int J Ment Health Syst*. 2011; 5(1): 2.
- [21] Beck CT. Predictors of postpartum depression: an update. *Nurs Res*. 2001; 50(5): 275-285.
- [22] Robertson E, Grace S, Wallington T, Stewart DE. Antenatal risk factors for postpartum depression: a synthesis of recent literature. *Gen Hosp Psychiatry*. 2004; 26(4): 289-295.
- [23] Beck CT. *Postpartum Mood and Anxiety Disorders: Case Studies Research, and Nursing Care*. 2nd ed. Washington, DC AWHONN; 2008.
- [24] Patel M, Bailey RK, Jabeen S, Ali S, Barker NC, Osiezagha K. Postpartum depression: a review. *J Health Care Poor Underserved*. 2011; 23(2): 534-542.
- [25] American Psychological Association. *Diagnostic and Statistical Manual of Mental Disorders*. 6th ed. Washington, DC: American Psychological Association; 2010.
- [26] Chen C, Kuo S, Chou Y, Chen H. Postpartum Taiwanese women: their postpartum depression, social support, and health-promoting lifestyle profiles. *J Clin Nurs*. 2007; 16: 1550-1560.
- [27] Governor of Madinah Province Receives UN Under-Secretary-General - gcc_press. *Gulf in the Media*, 6 June 2010.
- [28] Cox JL, Holden JM, Sagovsky R. Detection of postnatal depression: Development of the 10-item Edinburgh Postnatal Depression Scale. *British Journal of Psychiatry* 1987; 150: 782-786.
- [29] Bina R. The impact of cultural factors upon postpartum depression: a literature review. *Health Care Women Int*. 2008; 29(6): 568-592.
- [30] Hamany H, Jamhawi L, Al-Darawsheh J, Ailouni K. Consanguineous marriages in Jordan: why is the rate changing with time? *Clin Genet*. 2005; 67(6): 511-516.
- [31] Yehia DB, Callister LC, Hamdan-Mansour A. Prevalence and predictors of postpartum depression among Arabic Muslim Jordanian women serving in the military. *J Perinat Neonatal Nurs*. 2013 Jan-Mar; 27(1): 25-33.
- [32] Green K, Broom H, Mirabella J. Postnatal depression among mothers in the United Arab Emirates: socio-cultural and physical factors. *Psychol Health Med*. 2006; 11(4): 425-431.
- [33] Al Dallal FH, Grant IN. Postnatal depression among Bahrain women: prevalence of symptoms and psychosocial risk factor. *East Mediter Health J*. 2012; 18(5): 439-445.
- [34] O'Hara MW, Swain AM. Rates and risks of postpartum depression: a meta-analysis. *Int Rev Psychiatry*. 1996; 8: 37-54.
- [35] Josefsson A, Berg G, Nordin C, Sydsjö G. Prevalence of depressive symptoms in late pregnancy and postpartum. *Acta Obstet Gynecol Scand*. 2001; 80: 251-255.
- [36] Helbreich U, Karkun S. Cross-cultural and social diversity of prevalence of postpartum depression and depressive symptoms. *Journal of Affective Disorders*. 2006; 91: 97-111.
- [37] Ghubash R, Abou-Saleh MT. Postpartum psychiatric illness in Arab culture: prevalence and psychosocial correlates. *British Journal of Psychiatry* 1997; 171: 65-68.
- [38] Agoub M, Moussaoui D, Battas O. Prevalence of postpartum depression in Moroccan sample. *Archives of Women's Mental Health* 2005; 8(1):37-43.
- [39] Chaaya M, Campbell OMR, El Kak F, Shaar D, Harb H, Kaddour A. Postpartum depression: prevalence and determinants in Lebanon. *Archives of Women's Mental Health* 2002; 5(2): 65-72.
- [40] Goker AI, Yanikkerem E, Demet MM, Dikayak S, Yildirim Y, Koyuncu FM. Postpartum depression: is mode of delivery a risk factor? *ISRN Obstet Gynecol*. 2012; 2012: 616759.
- [41] Inandi T, Elci OC, Ozturk A, Egri M, Polat A, Sahin TK. Risk factors for depression in postnatal first year, in eastern Turkey. *International Journal of Epidemiology* 2002; 31: 1201-1207.
- [42] Verkerk GJM, Pop VJ, Van Son MJ, Van Heck GL. Prediction of depression in the postpartum period: a longitudinal follow-up study in high-risk and low-risk women. *Journal of Affective Disorders* 2003 Nov; 77: 159-166.
- [43] Lanes A, JKuk JL, Tamim H. Prevalence and characteristics of Postpartum Depression symptomatology among Canadian women: a cross-sectional study. *BMC Public Health* 2011; 11: 302
- [44] Tannous L, LGigante LP, Fuchs SC, Busnello EDA. Postnatal depression in Southern Brazil: prevalence and its demographic and socioeconomic determinants. *BMC Psychiatry* 2008; 8: article 1.
- [45] Kumar R. Postnatal mental illness: a transcultural perspective. *Soc Psychiatry Psychiatr Epidemiol*. 1994; 29: 250-264.

