

PREDICTORS OF POSTPARTUM DEPRESSION IN DUBAI, A RAPIDLY GROWING MULTICULTURAL SOCIETY IN THE UNITED ARAB EMIRATES

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SUMMARY

Background: Postpartum depression (PPD) is a significant public health problem adversely affecting mothers, their newborns, and other members of the family. Although PPD is common and potentially dangerous, only a minority of the cases are identified in primary health care settings during routine care, and the majority of depressed mothers in the community lies unrecognized and therefore untreated.

Subjects and methods: In this study, a total of 1500 mothers were approached randomly, 808 accepted to participate, and 504 were within the inclusion criteria (women who had a birth of a singleton full-term healthy infant, had an uncomplicated pregnancy, and were within their one week to six months postpartum). The participants completed the Edinburgh Postnatal Depression Scale.

Results: A total of 168 women had an EPDS score ≥ 10 , yielding a crude prevalence rate of 33%. The prevalence of suicidal ideation was 14 out of 504 (3%), among which 11 (79%) had EPDS score of ≥ 10 . We fitted multiple linear regression models to evaluate the predictors of variables measured on the EPDS scale. This model was statistically significant $p < 0.0001$ in predicting the total EPDS score. Women's employment status, baby's birth weight, stressful life event and marital conflict were statistically significant predictors.

Conclusions: The findings of this study are anticipated to entail the government and policy makers in the region to pay more attention to the apparently high prevalence of unrevealed PPD in the community. It is crucial to enhance screening mechanisms for early detection, providing interventions to manage symptoms, and at the same time mandating local guidelines to address the PPD pathology as a high priority for the UAE population.

Key words: postpartum depression - risk factors - screening - United Arab Emirates

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INTRODUCTION

Pregnancy and the postpartum period are the most dynamic events in a woman's life cycle and affect both her body and mind. Postpartum depression (PPD) is a significant public health problem adversely affecting mothers, their newborns, and other members of the family. Mothers with PPD or psychological illness find it difficult to care for their children. Postpartum depression also causes impaired maternal-infant interactions (Hipwell 2000) such as negative perceptions of infant behavior, which have been linked to attachment insecurity in children (Hipwell et al. 2000). Therefore, mental instability in the mother is considered a critical public health problem. Postpartum depression usually occurs a few weeks after delivery and lasts from two weeks to one year, with symptoms not very apparent to untrained observers (Pariser 1997). Mothers with PPD sometimes need intervention or medical treatment, which mandates early detection of women at risk.

According to a literature review, the rate of PPD in women is between 3–25% in the first year following delivery (Crawford-Faucher 2014). Risk factors for developing PPD are past history of psychological disorder, pre-existing history of depression or anxiety during pregnancy, lack of social support from friends and relatives, stressful life events such as the death of a loved one, divorce, job loss, unstable marital relationship, pregnancy-related complications, complicated delivery, and low socioeconomic status (Abdollahi 2016, Ramsauer 2016).

However, almost half of the suffering mothers ignore and deny the symptoms of depression and choose not to seek professional help (Zauderer 2009). Apart from distress impact on the mother, PPD undermines the marital relationship, impairs the emotional and cognitive development of the newborn child, and may result in abuse and negligence in the child's care (Tannous 2008). The problem of PPD may also lead to long-term morbidity, as the condition can persist or may

present with recurrent episodes of depression later on (Gjerdingen 2007, Sichel 2016).

Although PPD is common and potentially serious, only a minority of the cases are identified in primary health care settings during routine care (Gjerdingen 2007). The majority of depressed mothers in the community are unrecognized and therefore untreated (Gjerdingen 2007). However, for proper prevention, diagnosis, and treatment of PPD, more information, especially on the differences between populations with various degrees of risk, is needed. Identification of PPD can be improved by sharpening the awareness and skills of healthcare professionals in eliciting depressive symptoms. An approach, which is adopted by an increasing number of healthcare providers, is to systematically screen for PPD using self-report questionnaires (Gjerdingen 2007). The Edinburgh Postpartum Depression Scale (EPDS) is a validated mood assessment tool developed specifically to identify women experiencing/at risk of postpartum depression (Cox 1987, Matthey 2006). The EPDS has been translated from the original English version to several other languages including Arabic (Alvarado 2015, Ghubash 1997, Vivilaki 2009).

The status of PPD in The United Arab Emirates (UAE) remains vague; and no specific prevention/ treatment, management has been taken yet in primary care clinics to manage this condition. This study aims, firstly, to determine the prevalence of PPD during the first six months postpartum by using the screening tool EPDS; and secondly, evaluating the risk factors associated of PPD among women in the UAE to increase our knowledge for developing more effective interventions in the country.

SUBJECTS AND METHODS

Participants

Participants were selected from the ten major (based on patient footfall) Primary Healthcare Centers (PHC) of the Dubai Health Authority (DHA). The sample size of our study, cross-sectional design, was calculated using epidemiological information for a population of 8000 (e.g. total deliveries per year in DHA maternity hospitals), with an alpha of 5% and 95% confidence level. We needed a minimum required sample size of 367 (O'hara 1996).

Maternal inclusion criteria involved women from all nationalities that had birthed of a singleton full-term healthy infant and uncomplicated pregnancy who were within their one week to six months postpartum. Maternal exclusion criteria were past mental health disorder in the mothers and other co-morbidity. Infant Exclusion criteria were any congenital anomaly and admission to the neonatal intensive care unit.

Procedure

Surveys were conducted from October 2016 to February 2017. A pilot study was undertaken in PHC clinics. The aim of the research study was explained to all the participants, and their consent was taken after assuring them about the confidentiality of the collected information. All mothers, willing to participate in the study and scheduled to appear for immunizing their one-week to six months old children were included in the study until the proportionate sample was obtained.

Evaluation tools

The Edinburgh Postnatal Depression Scale

The Edinburgh Postnatal Depression Scale (EPDS) (Appleby 1997) that is a self-reporting, 10-item scale questionnaire designed specifically for detection of PPD was used in this study (Appleby 1997). This scale has been validated and translated into more than 12 languages, including Arabic (Ghubash 1997). Each questionnaire item is scored on a 4-point scale from 0–3, with the minimum and maximum total scores being 0 and 30 points, respectively. The cut-off point was 10 in this study for the assessment of postpartum depression. In the present study PPD was categorized into borderline depression (score 10-12) and severe depression (score 13 or more) (Appleby 1997). 'Suicidal ideation' (SI) was defined as an answer of 'Sometimes' or 'Yes, quite often' to question 10 of the EPDS 'The thought of harming myself has occurred to me'. 'No suicidal ideation' was defined by answering 'hardly ever' or 'never' for question 10. Both validated English and Arabic versions of EPDS were used in this study.

Socio-demographic measures

Data were also collected on age, nationality, marital status, educational level, employment status of women and husbands, and parity. Also, an interview questionnaire was developed covering the socio-demographic information and risk factors for PPD, for example, obstetric history, family history of depression, stressful life events, and social support.

Data analysis and statistics

All collected data were entered into SPSS version 20 (IBM Corp., Released 2011, Armonk, NY, US) for statistical analysis. The total depression score was calculated by summation of the individual question scores. Univariate descriptive analysis of the socio-demographic characteristics of the study sample and bivariate analysis, using the chi-square test for qualitative analysis, were conducted. Independent t-tests and analyses of variance (ANOVAs) were performed to analyze the differences between PPD and associated risk factors. Tukey's posthoc tests were used to examine group differences further. Multiple Logistic regression

analysis was also done to determine the predictors of PPD. All analyses were performed using SPSS (version 20). For all tests, alpha (α) was set at 0.05

Ethics statement

The study was approved by the institutional review board of Dubai Health Authority, Dubai (IRB number: DSREC-SR-10/2016_01). Participants were not compensated. Before participation in the study, an information session indicating purpose, risks, benefits, confidentiality, and voluntary nature of participation was given to the participants, and verbal consent was taken. Aggregate reporting of data assured to enhance confidentiality and accurate reporting by the respondents. The anonymity of participation was also guaranteed by the return of completed survey constructs to an administrator independent and blinded to the study hypothesis.

RESULTS

Characteristics of study sample

A total of 1500 mothers were approached randomly from ten PHC centers, by proportionate allocation to the population served by each health center. Eight hundred and eight responded positively to participate in the study; yet, 504 mothers were within the inclusion criteria for this study and had completed the survey. The mean age of the mothers who participated in the study was 29.7 ± 4.6 years (range: 18–42 years). Of the 504 women with valid EPDS data, a majority (333, 66%) was non-UAE nationals, married (503, 99.8%), had nonconsanguineous marriage (407, 81%), and stated having a nuclear type of family (349, 69%). The mainstream of women in this study had a university education (386, 77%), were full-time housewives (311, 62%), with husbands being full time employed (487, 96.5%), and had a family monthly income of 15,000–30,000 AED (282, 56%) (Table 1).

Table 2 shows the mother's impression regarding her pregnancy, childbirth, her husband and emotional support received. The majority of the mothers mentioned that their pregnancy was planned (291, 58%), their delivery was normal vaginal (257, 51%), with no epidural anesthesia (415, 82%). The proportion of positive feedback for emotional support was 88% (Table 2).

Prevalence of postpartum depression

A total of 168 women had an EPDS score ≥ 10 , yielding a crude prevalence rate of 33% for the whole study population. Out of which, 82 (16%) women had an EPDS score ≥ 13 (severe depression), and 86 (17%) had a score of 10–12 (borderline depression). The prevalence of suicidal ideation was 14 out of 504 (3%), among which 11 (79%) had EPDS score of ≥ 10 .

Risk factors for postpartum depression

We fitted a multiple linear regression model to evaluate the predictors of variables measured on the EPDS scale. This model was statistically significant $p < 0.0001$ in predicting the total EPDS score but explained only 22% of the variance in the EPDS score, $F(25, 422) = 4.79$ $R^2 = 0.22$, Adjusted $R^2 = 0.17$. Women's employment status, marital conflict, stressful life event, and baby's birth weight were statistically significant predictors (Figures 1, 2 and 3). We desired to calculate the increment in R^2 to compare the importance of each variable in the multiple linear regression model and to see how much each variable would increase R^2 if it was entered last. The four predictors were still statistically significant but not associated with a substantial increment to R^2 as measured by their semi-partial correlations of the EPDS scores. The greatest substantial increment to R^2 was a stressful life event (increment of R^2 of 0.0908, $p < 0.0001$) followed by marital stress (increment of R^2 of 0.0372, $p < 0.0001$), then women's employment (increment of R^2 of 0.0350, $p < 0.0001$), and the least important of the significant predictors was the baby's birth weight (increment of R^2 of 0.0121, $p < 0.01$).

We desired to see if there were statistically significant predictors of EPDS scores of the 83 Mothers that scored above 13 on the EPDS who are likely to be suffering from a depressive illness of varying severity. We fitted a multiple linear regression model to evaluate the predictors of variables measured on the EPDS scale for this group. Interestingly, this model was not statistically significant $p = 0.1512$ in predicting the total EPDS score and only explained 14 % of the variance in the EPDS score, $F(23, 37) = 1.46$ $R^2 = 0.4749$, Adjusted $R^2 = 0.1485$. The only statistically significant predictor was planned pregnancy in this group. A two sample unpaired t test with equal variances between women whose EPDS scores were under 13 and those that scored over 13 did not demonstrate statistically significant differences ($t(585) = -0.3948$, 95% CI [1.385776 1.466013] Std error = 0.0204, Std Deviation = 0.495. The effect size was also small with Cohen's $d = -0.0467719$.

We also wanted to see if there were differences in the statistically significant predictors of EPDS scores on women that scored above 13 of the EPDS and those that scored below 13. Unpaired t-tests comparing these variables demonstrated statistically significant differences between the two groups of women reporting a stressful life event and those reporting marital conflicts. For those women reporting a stressful life event the mean reporting of 83 women scoring above 13 was lower at 1.35 while the mean for the 504 women scoring below 13 was 1.63 with a difference of 0.284. The $t(585) = 4.9650$ $p < 0.0001$, 95% CI [1.552984 1.632706]. Unpaired t-tests comparing women with marital conflict scoring less than 13 and greater than 13 demonstrated statistically significant differences. For those women reporting a marital conflict, the mean reporting of 83 women

Tables 1. Risk factors for Postnatal depression

Characteristic	All Women N=504 n (%)	≤9 (Negative) N=336	EPDS Score 10-Dec (Borderline Depression) N=86	≥13 (Severe Depression) N=82	χ ² df	P value
Age						
<35	449 (89%)	301 (67%)	76 (17%)	72 (16%)	265.4	0.87
≥35	55 (11%)	35 (64%)	10 (18%)	10 (18%)	24	
Mean (SD)	29.7±4.6					
Min-Max	18-42					
Nationality						
UAE national	171 (34%)	113 (66%)	27 (16%)	31 (18%)	52.2	0.66
Non UAE national	333 (66%)	223 (67%)	59 (18%)	51 (15%)	1	
Marital Status						
Married	503 (99.8%)	336 (67%)	85 (17%)	82 (16%)	500.1	0.08
Divorced/Widowed	1 (0.2%)	0 (0%)	1 (100%)	0 (0%)	1	
Consanguinity with husband						
Related	97 (19%)	66 (68%)	13 (13%)	18 (19%)	190.2	0.5
None	407 (81%)	270 (66%)	73 (18%)	64 (16%)	1	
Type of Family						
Nuclear	349 (69%)	237 (68%)	61 (17%)	51 (15%)	74.5	0.31
Extended	155 (31%)	99 (64%)	25 (16%)	31 (20%)	1	
Educational level						
Less than high school	20 (4%)	12 (60%)	3 (15%)	5 (25%)	442.6	0.83
High school	98 (19%)	66 (67%)	18 (18%)	14 (14%)	2	
University	386 (77%)	258 (67%)	65 (17%)	63 (16%)		
Mother's employment						
Full-time housewife	311 (62%)	192 (62%)	61 (20%)	58 (19%)	263.6	0.0001*
Part-time worker	14 (3%)	9 (64%)	3 (21%)	2 (14%)	2	
Full-time worker	179 (35%)	135 (75%)	22 (12%)	22 (12%)		
Husband's employment						
Full-time worker	487 (96.5%)	328 (67%)	81 (17%)	78 (16%)	908.3	0.21
Part-time worker	13 (2.5%)	7 (54%)	4 (31%)	2 (15%)	2	
Unemployed	4 (1%)	1 (25%)	1 (25%)	2 (50%)		
Monthly income						
<15,000 AED	138 (27%)	95 (69%)	22 (16%)	21 (15%)	124.7	0.07
15,000-30,000 AED	282 (56%)	184 (65%)	53 (19%)	45 (16%)	2	
>30,000	84 (17%)	57 (68%)	11 (13%)	16 (19%)		

scoring above 13 was lower at 1.78 while the mean for the 504 women scoring below 13 was 1.91 with a difference of 0.130. The $t(585)=3.5916$ $p<0.001$, 95% CI [1.869442 1.919315].

We wanted to see if there was a difference between the EPDS scores of mothers who reported a stressful life event and those that did not. Unpaired t-tests demonstrated statistically significant differences. For the 185 women reporting a stressful life event, the mean EPDS score was 9.918919 while it was much lower at 6.253918 for Mothers who did not report a stressful life event with a mean difference of 3.665, $t(502)=8.5933$ $p<0.0001$, 95% CI [7.167061 8.031351]. The effect size was high (Cohen's $d=0.7941$).

Marital stress was the second greatest predictor of the EPDS score, and we wanted to see if there was a difference between the EPDS scores of mothers who reported marital stress and those that did not. Unpaired t-tests demonstrated statistically significant differences. For the 44 women reporting marital stress, the mean EPDS score was 12.29545 while it was much lower at

7.15 for mothers who did not report marital stress with a mean difference of 5.15, $t(502)=6.9027$ $p<0.0001$, 95% CI [7.167061 8.031351]. The effect size was extremely high (Cohen's $d=1.09$).

The baby's birth weight was a significant predictor of EPDS scores, and we identified birth weight as less than 2.5 Kg, 2.5-4 Kg, and more than 4 kg. We wanted to see if there was a difference between the EPDS scores that would be predicted by the different groups of birth weight. A higher birth weight did not predict the EPDS scores with statistical significance. We found that the four children with birth weights greater than 4 kg did not demonstrate statistically significant predictability of the EPDS scores ($p=0.079$). The smaller birth weights of less than 2.5 Kg were the strongest predictors of EPDS scores with the 34 children with low birth weights demonstrating parameter estimates (coefficients) of 9.06, $p<0.001$ in a regression model compared with the 466 children born with birth weights of 2.5-4 kg who had parameter estimates of 7.50, $p<0.001$.

Tables 2. Mother's impression about her pregnancy, delivery, and emotional support received

Characteristic	All Women N=504 n (%)	≤9 (Negative) N=336	EPDS Score		χ^2 df	P value
			10-12 (Borderline Depression) N=86	≥13 (Severe Depression) N=82		
Planned pregnancy						
Yes	291 (58%)	192 (66%)	53 (18%)	46 (16%)	12.0	0.7
No	213 (42%)	144 (68%)	33 (15%)	36 (17%)	1	
How many previous pregnancies						
<3	286 (57%)	194 (68%)	48 (17%)	44 (15%)	675.2	0.56
3-5	184 (37%)	118 (64%)	35 (19%)	31 (17%)	10	
>5	34 (7%)	24 (71%)	3 (9%)	7 (21%)		
Mean (SD)	2.7±1.8					
Min-Max	01-11					
Parity						
Primipara	147 (29%)	101 (69%)	21 (14%)	25 (17%)	87.5	0.56
Multipara	357 (71%)	235 (66%)	65 (18%)	57 (16%)	1	
How many previous deliveries						
<3	333 (66%)	223 (67%)	61 (18%)	49 (15%)	802	0.43
3-5	154 (31%)	103 (67%)	23 (15%)	28 (18%)	9	
>5	17 (3%)	10 (59%)	2 (12%)	5 (29%)		
Mean (SD)	2.3±1.4					
Min-Max	01-10					
Mode of delivery						
Normal vaginal delivery	257 (51%)	171 (67%)	45 (18%)	41 (16%)	114.2	0.87
Cesarean section	184 (36.5%)	124 (67%)	32 (17%)	28 (15%)	2	
Induction	63 (12.5%)	41 (65%)	9 (14%)	13 (21%)		
Epidural anesthesia						
Yes	89 (18%)	53 (60%)	13 (15%)	23 (26%)	210.8	0.001*
No	415 (82%)	283 (68%)	73 (18%)	59 (14%)	1	
Anyone present at delivery (husband/family member/friend)						
Yes	467 (93%)	314 (67%)	79 (17%)	74 (16%)	366.6	0.57
No	37 (7%)	22 (59%)	7 (19%)	8 (22%)	1	
Gender of your baby						
Boy	242 (48%)	157 (65%)	43 (18%)	42 (17%)	0.79	0.37
Girl	262 (52%)	179 (68%)	43 (16%)	40 (15%)	1	
Baby's birth weight						
<2.5 Kg	34 (7%)	17 (50%)	7 (21%)	10 (29%)	795.2	0.001*
2.5-4 Kg	466 (92%)	316 (68%)	79 (17%)	71 (15%)	1	
>4 Kg	4 (1%)	3 (75%)	0 (0%)	1 (25%)		
Breastfeeding your child						
Yes	431 (85.5%)	284 (66%)	74 (17%)	73 (17%)	254.2	0.57
No	73 (14.5%)	52 (71%)	12 (16%)	9 (12%)	1	
Postnatal stay with her family †						
Yes	287 (57%)	199 (69%)	49 (17%)	39 (14%)	10.1	0.07
No	216 (43%)	137 (63%)	36 (17%)	43 (20%)	1	
Received Emotional Support †						
Yes	458 (91%)	308 (69%)	76 (17%)	60 (14%)	292.5	0.001*
No	46 (9%)	8 (43%)	10 (24%)	22 (33%)	1	
Received Emotional support mostly from †						
Husband	188 (42%)	134 (71%)	30 (16%)	24 (13%)		0.06
Family	248 (56%)	172 (69%)	44 (18%)	32 (13%)	414.2	
Friend	8 (2%)	2 (25%)	2 (25%)	4 (50%)	3	
Husband was emotionally supportive						
Yes	458 (91%)	316 (69%)	75 (16%)	67 (15%)	336.3	0.001*
No	46 (9%)	20 (43%)	11 (24%)	15 (33%)	1	
Do you suffer from stressful life events?						
Yes	185 (37%)	91 (49%)	41 (22%)	53 (29%)	35.6	0.001*
No	319 (63%)	245 (77%)	45 (14%)	29 (9%)	1	
Do you suffer from any marital conflicts/problems?						
Yes	44 (9%)	12 (27%)	14 (32%)	18 (41%)	343.6	0.001*
No	460 (91%)	324 (70%)	72 (16%)	64 (14%)	1	
Does any member of your family suffer/suffered from depression?						
Yes	39 (8%)	20 (51%)	4 (10%)	15 (38%)	360.1	0.001*
No	465 (92%)	316 (68%)	82 (18%)	67 (14%)	1	

†some respondents did not answer this question. * Statistically significant. Differences in percentage responses were analyzed by Chi-Square test for nonparametric data using SPSS

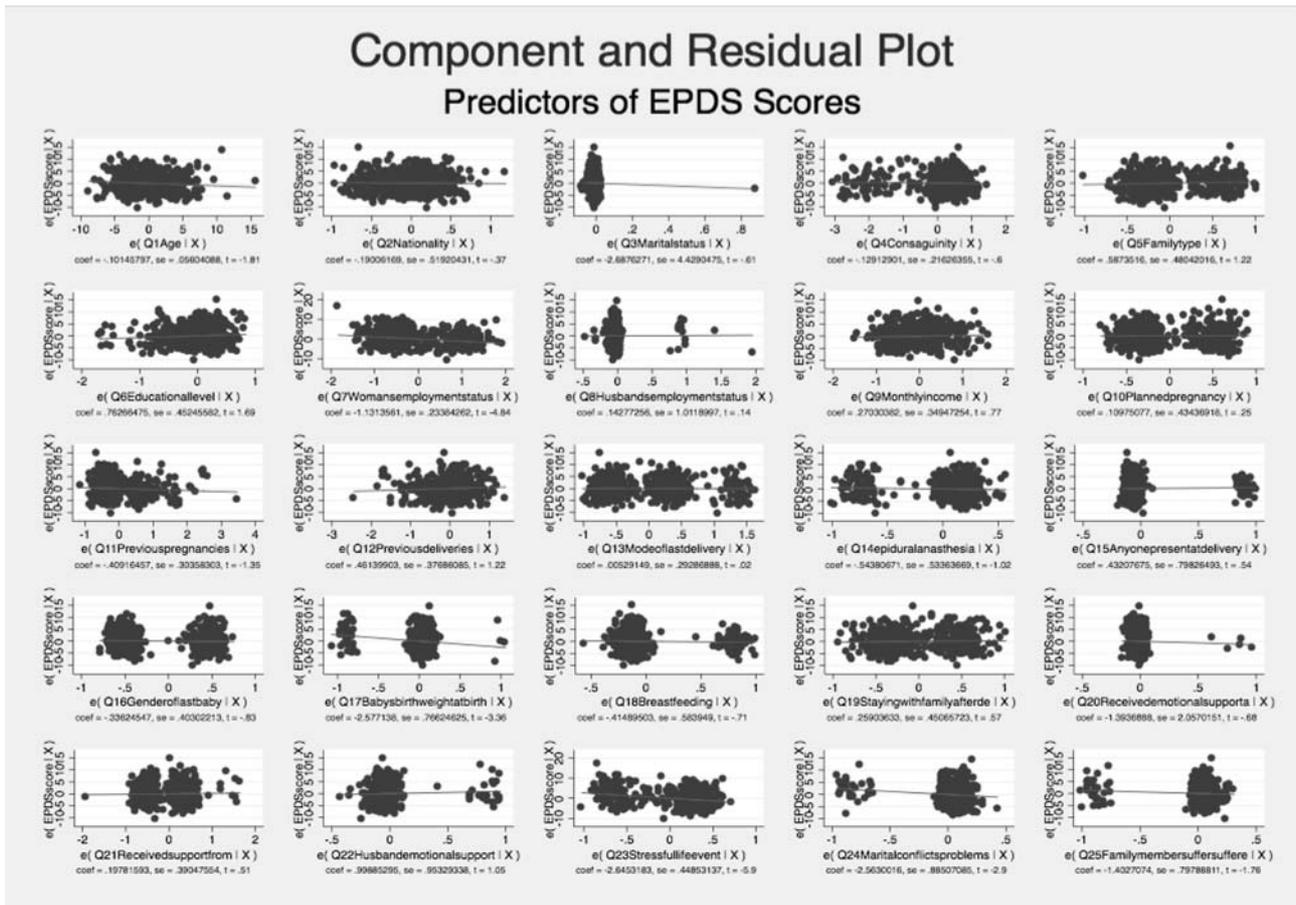


Figure 1. Component and Residual Plots of Predictors of EPDS Scores

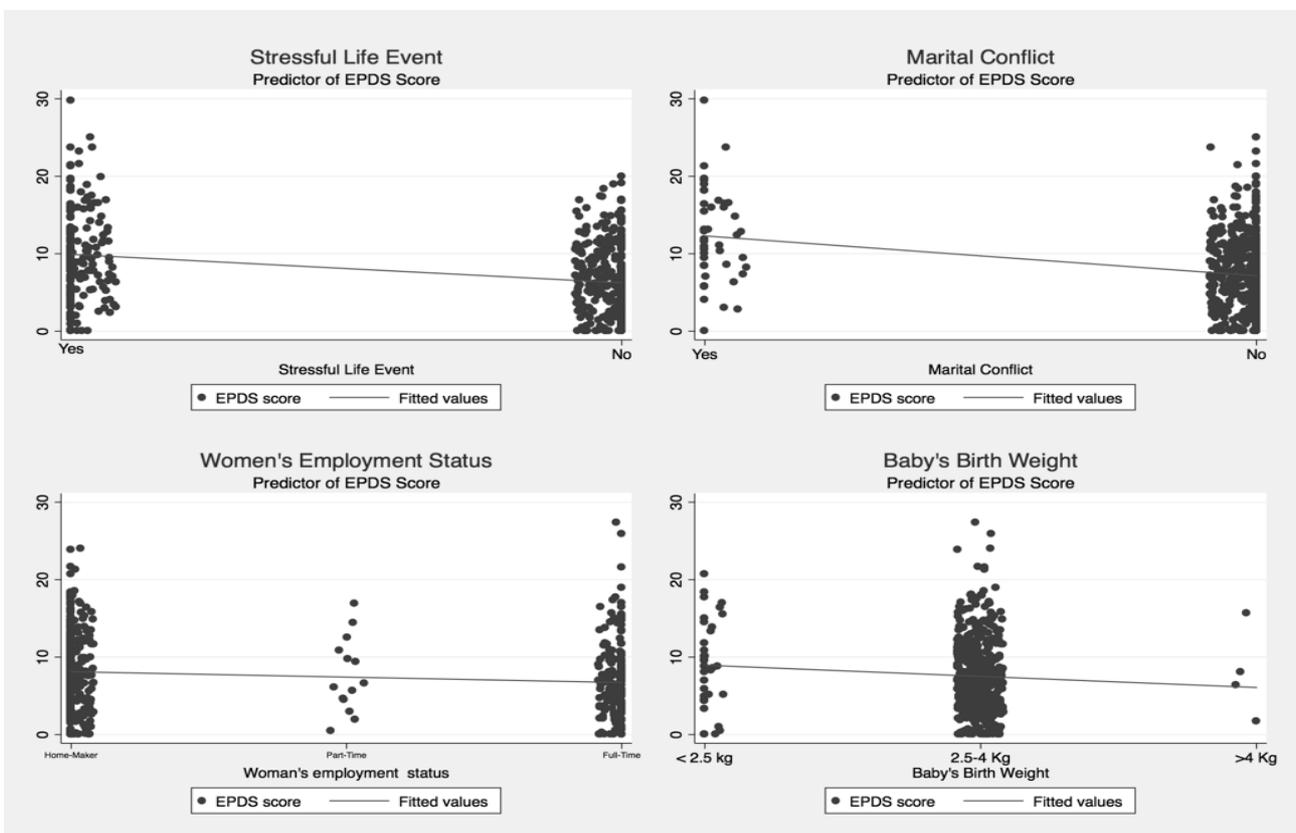


Figure 2. Statistically Significant Predictors of EPDS Scores

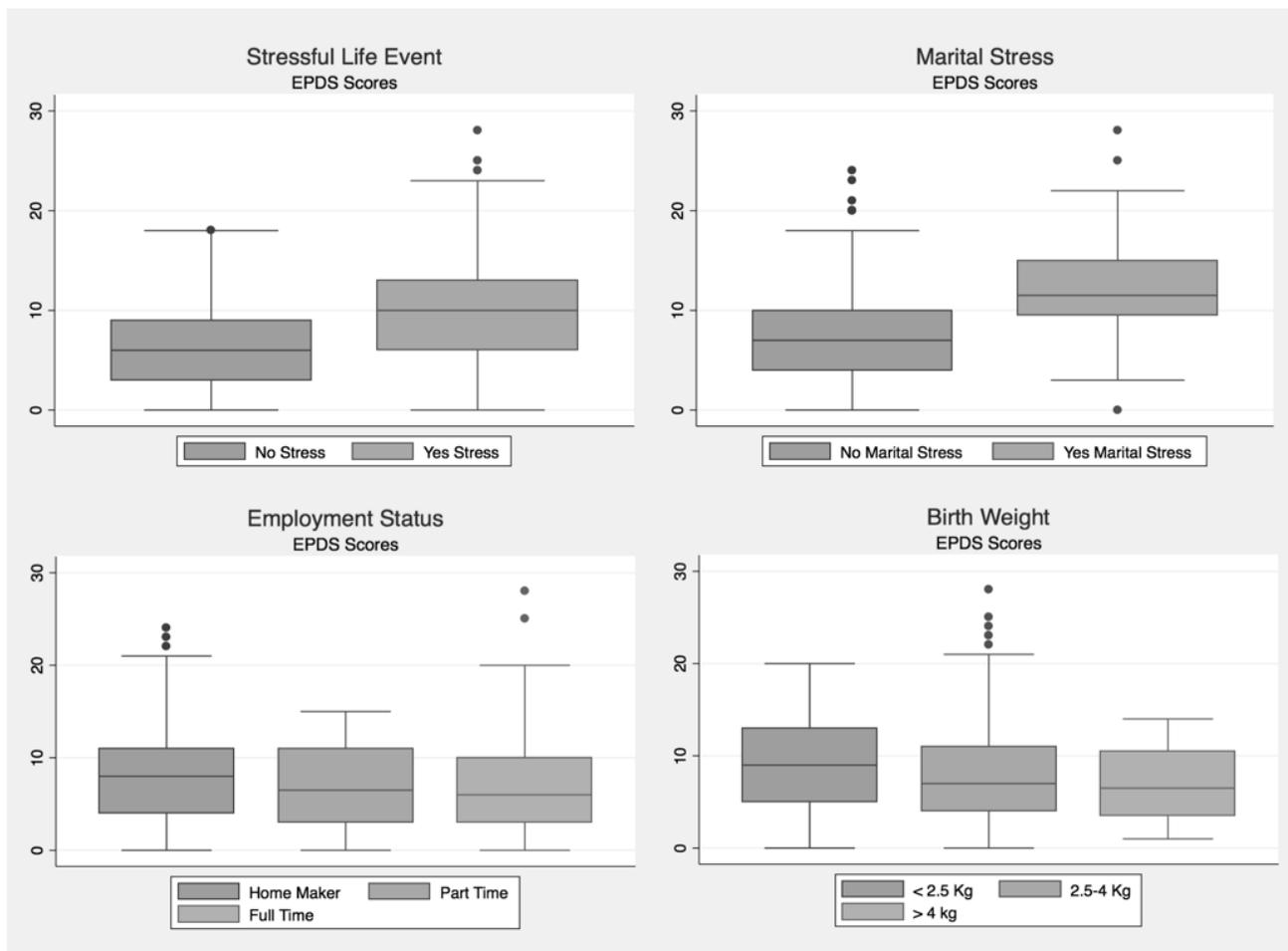


Figure 3. Box Plots of Significant Predictors of EPDRS Scores

A woman's employment status was a significant predictor of EPDS scores, and we identified mothers as homemakers, part-time and full-time workers. We wanted to see if there was a difference between the EPDS scores of mothers that would be predicted by their employment status. The 179 mothers that worked full time scored lower on the EPDS (mean 6.74) than mothers who worked part time (mean 7) or who stayed at home (mean 8.12). Unpaired t-tests demonstrated statistically significant differences. For the 44 women reporting marital stress, the mean EPDS score was 12.29545 while it was much lower at 7.15 for mothers who did not report marital stress with a mean difference of 5.15, $t(502) = 6.9027$ $p < 0.0001$, 95% CI [7.167061 8.031351]. The effect size was extremely high (Cohen's $d = 1.09$).

DISCUSSION

Postpartum depression appears to rank high amongst the disorders that are unrecognized and often left untreated, even though these sufferers are at increased risk for psychiatric disorders. In the United States, it was reported that less than one-third of all pregnant women undergo major (Wisner 2013) depression before childbirth, nearly one-third during pregnancy and, nearly

40% postpartum (Wisner 2013). Postpartum depression has become a major public health issue globally affecting both the mother and the family. Although PPD is on the rise all over the world, prevalence in different regions varies. The prevalence rate is relatively low in Western Europe and Australia, high in Asia and South America and somewhere in between in the United States (Affonso 2000, Chaudron 2010, Flynn 2011). For a variety of reasons, typically Asia and the Middle Eastern region has been recognized for higher rates of PPD affecting women. In Asia particularly PPD shown to be high in several reports from Taiwan (61%) (Affonso 2000), Korea (61%) (Park 2015), Turkey (43%) (Çelik 2016), and India (31%) (Siddharudha Shivalli 2015). For instance, Middle Eastern countries also showed high prevalence of PPD with 18%-33% in Saudi Arabia (Alasoom 2014, Alharbi 2014), 29% in Iraq (Ahmed 2012), 21% in Lebanon (Chaaya 2002), 17.6% in Qatar (Burgut 2013), and 12% in Oman (Al Hinai 2014). Locally, a study in Dubai, UAE, was carried out on day seven postpartum women using the EPDS to assess PPD on a sample size of 95 women, and the results showed a prevalence of 18% (Ghubash 1997). Another study conducted in Sharjah, UAE, also used the EPDS in assessing PPD among 137 participants and concluded a prevalence of 10%

(Hamdan 2011). Socioeconomic, cultural, family structure, relationship, unplanned pregnancy, preference for male gender and support group availability, factors have all been reported as contributing factors leading to PPD in women (Silva 2012, Tannous2008). In spite of the global data on PPD, updated precise data from the UAE is deficient. The UAE transformed from a nomadic to a modern country in the past 45 years following oil and gas discovery. Healthcare is now accessible to a vast majority of the population for both the citizens and the expatriates. The United Arab Emirates citizens comprise nearly 20% of the total 9 million population. Incidentally, both UAE citizens and expatriates showed a similar prevalence of severe postpartum depression (less than 3%).

This study shows that women's employment status, baby's birth weight, stressful life event and marital conflict are statistically significant predictors of PPD in UAE (Figures 1 and 2). As the patriarchal Eastern and Middle Eastern culture preferentially expects the women to be a homemaker, this study showed that female workers, either part-time or full-time showed a significantly low prevalence of PPD (Table 1). Similar findings have been corroborated previously by Gurudatt (2014). The significant difference indicates that working mothers perceived less infant distress at separation were less anxious about separation and were less apprehensive about other caregivers. Further, it also leads to the fact that mother's participation in the social sphere, education, career, income needs and freedom also help to ameliorate PPD.

Emotional support, in particular, the husband's emotional support, is critical to ameliorating PPD in our study, validating other global observations (Negron 2013). Furthermore, stress and marital conflicts were also significant factors that affected PPD in this study. Lack of social and psychosocial support groups in the UAE and the complete reliance on the family for support needs reexamination. Needless to say, in spite the presence of many studies concerning PPD in the region, the Arabic culture and society have seldom taken mechanisms to address women's mental health problems. Baby's birth weight was shown in this study to be a predictor for PPD, and this is in line with previous studies which have shown that significantly elevated risk factors for postpartum depression include concerns of infant weight gain (Staehelin 2013, Helle 2015). Epidural anesthesia significantly associated with PPD in our study, which is in line with Dawson A (Dawson 2009) report that showed fear and anxiety associated with epidural anesthesia and the lower pain threshold are among contributing factors to PPD.

The age group, more than 35 years was more vulnerable at 36% prevalence for moderate to severe depression (Table 1). Although Al Hinai et al. (2014) has reported consanguinity as a risk factor for PPD, our study did not find a correlation between consanguineous marriages and PPD. Though PPD has been reported to

be positively correlated with multiparity and unplanned pregnancy (Ambarwati 2014), this study does not show a significant correlation between PPD with previous parenthood or whether the parenthood was planned or not. The variance observed might be due to strong family bonds and the presence of multiple caregivers within the family in Arab Culture.

The findings of this study are anticipated to entail the government and policy makers in the region to pay more attention to the apparently high prevalence of unrevealed PPD in the community. It is crucial to enhance screening mechanisms for early detection, providing interventions to manage symptoms, and at the same time mandating local guidelines to address the PPD pathology as a high priority for the UAE population.

Limitations

This study used a cross-sectional design; thus, it only speculated on the causal relationship between the variables. Also, we used only the EPDS screening test, whereas multiple test confirmation by structured or semi-structured interview is needed. Convenience sampling was used in this study so that the results might be unrepresentative of the population being studied. However, despite these limitations, the results of this study provide a basis for further planning future in-depth research before developing / implementation of the PPD screening in public healthcare centers in UAE.

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Contribution of individual authors:

All authors participated in literature searches, data analyses, writing of the manuscript as well as approval of the final version.

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