Prevalence and predictors of postnatal depression in mothers of Karachi

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ABSTRACT

Introduction: Postnatal depression (PND) is a vital public health problem affecting maternal and child health. The prevalence of postnatal depression varies between 3.5% and 40%. Postnatal depression normally occurs within 6–8 weeks after childbirth. This study examined the etiological role of risk factors recognized to be relevant to the onset of postpartum depression and poverty in developed societies faced by women.

Objectives: The first objective was to determine the prevalence of postnatal depression in mothers of Karachi. The second objective was to determine the risk factors associated with postnatal depression in mothers of Karachi.

Method: This was a cross sectional study, data was collected from three different districts of Karachi from December 2010 till April 2011. The study population was selected by a cluster sampling method. Using probability cluster sampling 150 women were selected from each

cluster for the study population of 700 women. A total of 450 women were selected for participation in the study. All women who gave their written consent and were more than 30 weeks pregnant were included. Women, who were transient visitors and had missing data, were excluded. General Health Questionnaire, a 12 item measure was used for psychological health. Cronbach's alpha was 0.71. At 6–8 weeks after birth, the mothers were administered Edinburgh Postnatal Depression Scale. Cronbach's Alpha of Edinburgh Postnatal Depression Scale 0.80. Postnatal depression was determined from binary logistic regression analysis of antenatal and early postnatal variables.

Result: Among antenatal factors mothers who had current score of five or more on twelve item General Health Questionnaire had a prevalence of 48.6% of postnatal depression(252/519; *p*=0.037) These mothers were 1.52 times (95% CI, 1.026-2.263) at the risk of postnatal depression. Protective factors against post natal depression include planned pregnancy, (relative risk=0.63, CI: 0.431-0.946) help from family members, (relative risk=0.62, 95% CI: 0.418-0.918) and help from husband (relative risk=0.54, 95% CI: 0.369-0.817). Among postnatal factors, mothers who had cesarean delivery had a prevalence of 48.4% of postnatal depression (251/519; *p*-value=0.025. These mothers were 1.57 times (95% CI, 1.057-2.33) at the risk of postnatal depression.

Conclusion: Postnatal depression is a common mental illness in our local population; it is usually a consequence of preexisting antenatal morbidity and is a chronic disorder for one half of the women who suffer from this illness. Key message: Cognitive behavioral therapy and antidepressants help for postnatal depression.

Keywords: Postnatal depression, poverty, psychosocial problems, cultural norms, education.

Introduction

Postnatal depression (PND) is a vital public health problem affecting maternal and child health.[1-3] The prevalence of postnatal depression varies between 3.5% and 40%.[4-7]Postnatal depression normally occurs within 6–8 weeks after childbirth. In developed countries, the risk factors for postnatal depression are past history of psychological disorder, psychological disorder during pregnancy, low socioeconomic status, complicated delivery, and poor marital relationship.[8] Women in many countries whose populations have low incomes face considerable inequalities, ranging from fewer opportunities in education and employment to less control over personal decisions, such as the use of contraception to plan pregnancies. In Pakistan, the cultural view that male children are preferred over female children is an important reason that the sex ratio is unbalanced in favor of men.[9] Cultural conflicts as well as common features within less-developed countries like poverty, unemployment, lack of social services and imbalance in income distribution has provoked various psychosocial problems.[10-12] The consequences of these problems have been seen particularly in women's and children's health.[13] Women in particular have various risk factors in southern Pakistan, such as gender discrimination, status in the

community, limited educational opportunities, and lack of health services.[14] According to the Organization of Economic Cooperation and Development (OECD) 2009 Global Education Digest, 6.3% of Pakistanis (8.9% of males and 3.5% of females) were university graduates as of 2007. Among them16% are in the age cohort 25-34 years.[15] Limited educational and occupational opportunities increase the vulnerability of women to psychosocial problems.

Rationale

Few studies concerning prevalence and risk factors for postnatal depression have been conducted. The ground of this study was to describe postnatal depression in a developing country. This study examined the etiological role of risk factors recognized to be relevant to the onset of postpartum depression and poverty in developed societies faced by women in Pakistan. The objective of this study was to determine the prevalence and risk factors associated with postnatal depression in mothers of Karachi.

Material and Method

Study design and study cases

This was a cross sectional study conducted, data were collected from three different districts of Karachi from December 2010 till April 2011. The study population was selected by a cluster sampling method. Using probability cluster sampling 150 women were selected from each cluster for the study population of 700 women. A total of 450 women were selected for participation in the study. All women who gave their written consent were included. Women who were transient visitors and had missing data, 58 (7%) were excluded. All of the mothers were more than 30 weeks pregnant. All women were interviewed at recruitment with the General Health Questionnaire, a 12 item measure of overall general psychological health.[16] All women were interviewed at recruitment for psychological well-being which was measured using the 12-item General Health Questionnaire (GHQ-12), with a higher score indicating worse psychological well-being.[17, 18] With this scale, 2 factors could be computed: depression/anxiety (6 items) and social dysfunction (6 items). Responses range on a 4-point scale from 1 to 4, with the sum score ranging from 6 to 24 for each factor,[19]cronbach's alpha of GHQ-12 is 0.71.[20] Trained gynecologists collected data in scheduled home visits, by face-to-face interviews. In these interviews information on demographic profile, possible risk factors of depression, including personal and family relationships, maternity and childhood data, and psychiatric history was collected. Data regarding availability of social support, quality of marital relationship, marital violence (lifetime and during pregnancy), and relationships with in-laws were collected. Details of the current pregnancy (whether it was planned or not and if a particular gender of infant was favored) were also gathered. At 6–8 weeks after birth, the mothers were administered Edinburgh Postnatal Depression Scale, a widely used screening questionnaire for the detection of postnatal depression.[21] Scores on this measure range from 0 to 30. A cutoff score of 11 or 12 on the Edinburgh Postnatal Depression Scale was found to detect depression with a specificity of 85% and sensitivity of 92%. Similar validity coefficients have been reported with the use of the Edinburgh Postnatal Depression Scale in other Asian cultures.[22] Cronbach's Alpha of Edinburgh Postnatal Depression Scale is 0.80.[23] Obstetric histories included information about

the current pregnancy, including type of delivery, prematurity of infant, infant illness and infant hospital admission. Questions about infant behavior included data regarding infant crying, sleeping, feeding, and need to be carried. Data were also obtained about maternal support from the patient's husband, mother, and mother-in-law.

Sample Size: The sample size calculation was done using the World Health Organization software for "Sample Size Calculation" edited by L. Lemeshow and S. K. Lwanga, where α=5%, 1-Beta=90, Po=0.23, Pa=0.29, sample size=450.

Statistical Analysis: Analyses were aimed at answering each of the research objectives. The occurrence of postnatal depression was estimated by using scores on the Edinburgh Postnatal Depression Scale at 6–8 weeks after delivery; women who scored 12 or more were considered to have postnatal depression. The prevalence of depression in the postnatal period was determined from the proportion of mothers who developed depressive disorder after childbirth. Univariate associations between antenatal and postnatal variables and postnatal depression were considered to be predictors of postnatal depression. The outcome for mothers with postnatal depression was determined from binary logistic regression analysis of antenatal and early postnatal variables with the persistence of postnatal depression at 6–8 weeks. All analyses were performed using statistical package for social sciences version 16.

Results

A total of 519 mothers participated in this study and were reexamined at 6-8 weeks. Among these participants 271 (52.21%) developed postnatal depression. Among the antenatal factors, mothers who had difficulty meeting daily needs had a prevalence of 48.9% of postnatal depression (254/519; *p*-value = 0.046). These mothers were 1.49 times (95% CI, 1.007-2.218) at the risk of postnatal depression. Mothers who had one or more female children had a prevalence of 48.7% of postnatal depression (253/519; *p*-value = 0.046). These mothers were 1.49 times (95% CI, 1.007-2.218) at the risk of postnatal depression. Mothers who had current score of five or more on twelve item General Health Questionnaire had a prevalence of 48.6% of postnatal depression (252/519; p=0.037) These mothers were 1.52 times (95% CI, 1.026-2.263) at the risk of postnatal depression. Protective factors against post natal depression include planned pregnancy, (odds ratio=0.63, CI: 0.431-0.946) help from family members, (odds ratio =0.62, 95% CI: 0.418-0.918) and help from husband (odds ratio =0.549, 95% CI: 0.369-0.817). Several other protective factors include wife's college level education, (odds ratio =0.221, 95% CI: 0.141-0.346) and high school education, (odds ratio =0.31, 95% CI: 0.20-0.48). Women working outside had 26.2% of depression. These women had 49% protective effect from depression, (odds ratio =0.49, 95% CI: 0.33-0.74). Among post natal risk factors, mothers who had cesarean delivery had a prevalence of 48.4% of postnatal depression (251/519; *p*-value = 0.025. These mothers were 1.57 times (95% CI, 1.057-2.33) at the risk of postnatal depression. Mothers whom infant had fever had a prevalence of 48.7% of postnatal depression (253/519; p=0.032). These mothers were 1.54 times (95% CI, 1.037-2.287) at the risk of postnatal depression. Mother whom infant had trouble breast feeding had a prevalence of 49.1% of postnatal depression (255/519; *p*=0.041). These mothers were 1.51 times (95% CI, 1.018-2.241) at the risk of postnatal depression. Mother whom infant had formula had a prevalence of 50.1% of postnatal

depression (260/519; *p*=0.086). These mothers were 1.41 times (95% CI, 0.952-2.089) at the risk of postnatal depression. Mothers whom infant cried excessively had a prevalence of 50.3% of postnatal depression (261/519; *p*=0.077). These mothers were 1.42 times (95% CI, 0.962-2.11) at the risk of postnatal depression. Mother who slept too little had a prevalence of 51.3% of postnatal depression (266/519; *p*=0.067). These mothers were 1.44 times (95% CI, 0.975-2.13) at the risk of postnatal depression. Mothers whom infant had difficulty sucking had a prevalence of 51.8% of postnatal depression (269/519; *p*=0.047). These mothers were 1.48 times (95% CI, 1.006-2.205) at the risk of postnatal depression. Mothers whom infant wanted to be carried all times had a prevalence of 52.2% of postnatal depression (271/519; *p*=0.036). These mothers were 1.52 times (95% CI, 1.027-2.25) at the risk of postnatal depression.

Discussion

We evaluated depression and risk factors in women from the southern part of Karachi during the 5 month postnatal period. The study population was typical of southern Karachi, with a majority of married, young house wives with limited education. In this study, we observed that more than 25% of women had a high risk of depression in their first postnatal year. Post natal depression likely starts in the first couple of postpartum weeks; however, it is not uncommon to observe psychological problems one or even two years after delivery starts in the first couple of postpartum weeks; however, it is not uncommon to observe psychological problems one or even two years after delivery.[25] This study supported a possible risk factors of depression in the postpartum year. The observed depression rate in this study was higher than in many industrialized countries; O'Hara and Swain reported that the prevalence of PND varied between 10–20% in 12 separate studies using the EPDS.[26] We observed a significantly increased risk of depression among women with poor family relationships as reported in previous studies.[26–30] A study from Israel reported that lack of social support and marital disharmony are strong predictive risk factors of PND.[31] A similar study from South Africa showed a link between the risk of PND and family relationships, social support, and preparation for motherhood.[32] A positive pattern of family relationships might be counted as one of the most important protective factors in the etiology of PND. In our analysis we found a significantly increased risk of depression with various socioeconomic variables including education and occupation. In Santiago, Chile, mothers with lower incomes had a threefold increase in the prevalence of PND in comparison to mothers with higher incomes.[33] We believe that improving the social status of women would be an important step in a preventive approach against PND. In this study we found a significant excess risk of depression among women with maternal risk factors including infant who had difficulty meeting daily needs, infant who had one or more female child, cesarean delivery, and infant who had fever. These results showed that effective community-based public health services, including maternity and childhood care, are vital factors for mental health as well as physical well-being. The household responsibilities of women have not decreased but they have been also carrying outside responsibilities. Beside these, there are various other chronic social problems impacting women's health including, high birth rate, low education level, poverty, insufficient health care, and an inadequate social security system in the country.[34,35,36]
The cross-sectional study design has limited capability to evaluate PND risk factors. We could not assess pre-birth mood state and other risk factors prospectively. The important strength of our study is that we observed a significant relationship between post natal depression evaluation

and possible risk factors. The long term consequences of this health problem in less developed populations should be evaluated in further prospective studies. In conclusion, we observed that in southern Pakistan, depression in the postnatal first year is an important public health problem and significantly related to many social, economic, and psychological factors. Informing health professionals and social workers about these issues is important in improving the maternal and child health in developing countries.

Conclusion

Postnatal depression is a common mental illness in our local population; it is usually a consequence of preexisting antenatal morbidity and is a chronic disorder for one half of the women who suffer from this illness.

Recommendations

Patients must be regularly screened for depression in those practices that have systems in place to assure correct diagnosis, effective treatment, and follow-up. Screening for postpartum depression can be performed at postpartum or well-child visits, with well-child visits providing more screening opportunities.

Conflict of Interest: The authors declare that they have no competing interests.

References

1. Cogill SR CH, Alexandra H, Robson KM, Kumar R. Impact of maternal postnatal depression on cognitive development of young children. *BMJ*. 1986;292:1165-67.
2. Sinclair D ML. Effect of postnatal depression on children's adjustment to school. *Br J Psychiatry*. 1998;172:58-63.
3. Murray L SD, Cooper P, Ducournau P, Turner P, Stein A. The socio-emotional development of 5 year old children of postnatally depressed mothers. *J Child Psychol Psychiatry*. 1999;40:1259-71.
4. Ballard CG DR, Cullen PC, Mohan RN, Dean C. Prevalence of postnatal psychiatric morbidity in mothers and fathers. *Br J Psychiatry*. 1994;164:782-88.
5. Whiteford H, Buckingham B, Manderscheid R. Australia's National Mental Health Strategy. *Br J Psychiatry*. 2002;180-210-5.
6. Bridge LR, Little BC, Hayworth J, Dewhurst J, Priest RG. Psychometric antenatal predictors of post-natal depressed mood. *J Psychosom Res*. 1985;29(3):325-31.
7. Evins GG, Theofrastous JP, Galvin SL. Postpartum depression: A comparison of screening and routine clinical evaluation. *Am J Obstet Gynecol*. 2000;182(5):1080-82.
8. O'Hara Michael W, Swain AM. Rates and risk of postpartum depression—a meta-analysis. *Int Rev Psychiatry*. 1996;8:37-54.
9. Cohen A. Excess female mortality in India: the case of Himachal Pradesh. *Am J Public Health*. 2000;90(9):1369–71.

10. Republic of Turkey, Prime Ministry, State Planning Organization. *The Project of East Anatolia*. Ankara, 2000.
11. World Health Report. Nations for Mental Health—A focus on Women. Available at: http://www.who.int/mental_health/media/en/400.pdf. Accessed on August 16, 2011.
12. Women's Mental Health: An Evidence Based Review, World Health Organization Geneva. Available at: http://whqlibdoc.who.int/hq/2000/who_msd_mdp_00.1.pdf World Health Organization. Geneva. Accessed on August 17, 2011.
13. Matud M. Pillar. Domestic abuse and children's health in the Canary Islands, Spain. *European Psychologist*. 2007;12(1):45-53.
14. Women and nutrition: reflections from India and Pakistan. Meera Chatterjee and Julian Lambert. Available at: http://www.unsystem.org/SCN/archives/npp06/ch16.htm. Accessed on August 18, 2011.
15. UNESCO Institute for Statistics. Literacy. United Nations Educational, Scientific and Cultural Organization. Available at: http://www.uis.unesco.org/literacy/Pages/default.aspx. Accessed on August 22, 2011.
16. Zuzana Veselska AMG, Beata Gajdosova, Olga Orosova et al. Socio-economic differences in self-esteem of adolescents influenced by personality, mental health and social support. *Eur J Public Health*. 2009;20(6):647–52.
17. Ali Montazeri, Mohammad Shariati, Gholamreza Garmaroudi, Mehdi Ebadi and Abolfazl Fateh. The 12 item General Health Questionnaire (GHQ-12: translation and validation study of the Iranian version. *Health and quality of life outcomes*. 2003;1(66).
18. Ian McDowell. Psychological Well-being: Measuring Health: A Guide to Rating Scales and Questionnaires, New York: Oxford University Press; 2006.
19. Sarkova M Nagyoval I, Katreniakova Z, et al. Psychometric evaluation of the general health questionnaire-12 and Rosenberg self-esteem scale in Hungariona and Slovak early adolescents. *Stud Psychol (Bratisl)*. 2006;48:69-79.
20. Sheereen Nor Zulkefly Rozumah Baharudin. Using the 12-item General Health Questionnaire (GHQ-12) to Assess the Psychological Health of Malaysian College Students. *Global Journal of Health Science*. 2010;2(1).
21. Cox JL, Holden JM, Saqovsky R. Detection of postnatal depression: development of the 10-item Edinburgh Postnatal Depression Scale. *Br J Psychiatry*. 1987;150:782–6
22. Ghubash R A-SM, Daradkeh TK. The validity of the Arabic Edinburgh Postnatal Depression Scale. *Soc Psychiatry Psychiatr Epidemiol*. 1997;32:474–6.
23. Virginia Henderson International Nursing Library. The Influence of Post Partum Disruption on Maternal Functional Status. Available at: http://www.nursinglibrary.org/vhl/handle/10755/152268. Accessed on August 18, 2012.
24. Parry BL. Postpartum psychiatric syndromes. In: BJ S, ed. Comprehensive Textbook of Psychiatry: 6th Edn. Baltimore: Williams & Wilkins 1995:1059–66.
25. O'Hara MW SA. Rates and risk of postpartum depression: a meta-analysis. *Int Rev Psychiatry*. 1996;8 37–54.
26. Stuchbery M MS, Barnett B. Postnatal Depression and social supports in Vietnamese Arabic and Anglo-Celtic mothers. *Soc Psychiatry Psychiatr Epidemiol*. 1998;33:483–90.
27. Stein A CP, Campbell EA, Day A, Althsm PME. Social adversity and peri-natal complications: their relation to postnatal depression. *BMJ*. 1989;298:1073–74.
28. Zhang R CQ, Li Y. Study for the factors related to postpartum depression. *Zhonghua Fu Chan Ke Za Zhi*. 1999;34(4):231-3.

29. Glasser S BV, Boyko V et al. Postpartum depression in an Israeli cohort: demographic, psychosocial and medical risk factors. *J Psychosom Obstet Gynaecol*. 2000;21:99–108.
30. Mills EP FG, Lea SJ. Postnatal depression: an examination of psychological factors. S *Afr Med J*. 1995;85(99-105).
31. Jadresic E AR. Prevalence of postpartum depression and associated factors in Santiago, Chile. *Rev Med Chile*. 1995;123:694–99.
32. Lane A R MM, Kinsella A. Turner M, Barry S. Postnatal depression and elation among mothers and their partners: prevalence and predictors. *Br J Psychiatry*. 1997;171:550–55.
33. Republic of Turkey, Prime Ministry, State Institute of Statistics. *Population Census.* Ankara, 1997.
34. The Hacettepe University Institute of Population Studies. *Turkish Demographic and Health Survey Report*. Ankara, 2001.
35. Zelkowitz P, Milet TH. Screening for post-partum depression in a community sample. *Can J Pyschiatry*. 1995;40:80–86.
36. Vega-Dienstmaier JM, Mazotti G, Stucchi-Portocarrero S, Campos M. Prevalence and risk factors for depression in postpartum women. *Actas Esp Psiquiatr*. 1999;27:299–303.

Table 1: Demographic profile and prevalence of postnatal depression

Demographics & predictors of postnatal depression	**Postnatal depression Yes**	**Postnatal depression No**
Age groups (years)		
18-24	20%	80%
25-35	33%	66%
36-44	41%	59%
Antenatal risk factors		
Had difficulty meeting daily needs	48.9%	51.1%
Had one or more female child	48.7%	51.3%
Current score of five or more on General Health Questionnaire	48.6%	51.4%
Postnatal risk factors		
Cesarean delivery	48.4%	51.6%
Infant had fever	48.7%	51.3%
Infant had trouble breast feeding	49.1%	50.9%
Infant fed formula	50.1%	49.9%
Infant had difficulty sucking	51.8%	48.2%
Infant wanted to be carried all times	52.2%	47.8%
Education		
College level	21.0%	79.0%
High school	24.5%	75.5%
Primary school	28.3%	71.7%
No education	55.7%	44.3%
Wife's Occupation		
House wife	52.8%	47.2%
Outside work	30.3%	69.7%

Table 2: Probability of post natal depression - Binary logistic regression analysis

Antenatal risk factors	**Odds ratio (95% confidence interval)**	***p*-values**
Age groups (years)		
18-24 (ref=1)		
25-35 (ref=1)	1.13 (1.07-1.50)	0.002
36-44 (ref=1)	1.34 (1.23-1.49)	0.001
Antenatal risk factors		
Had difficulty meeting daily needs (ref=no)	1.49 (1.00-2.21)	0.046
Had one or more female child (ref=no)	1.49 (1.00-2.21)	0.046
Current score of five or more on General Health Questionnaire (ref=no)	1.52 (1.02-2.26)	0.037
Protective factors		
Planned pregnancy (ref=no)	0.63 (0.43-0.94)	0.025
Received help from relatives (ref=no)	0.62 (0.41-0.91)	0.017
Received help from husband (ref=no)	0.54 (0.36-0.81)	0.003
Postnatal risk factors		
Cesarean delivery (ref=Normal Vaginal Delivery)	1.57 (1.05-2.33)	0.025
Infant had fever (ref=no)	1.54 (1.03-2.28)	0.032
Infant had trouble breast feeding (ref=no)	1.51 (1.01-2.24)	0.041
Infant fed formula (ref=no)	1.41 (0.95-2.08)	0.086
Infant had difficulty sucking (ref=no)	1.48 (1.00-2.20)	0.047
Infant wanted to be carried all times (ref=no)	1.52 (1.02-2.25)	0.036