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Postnatal depressive symptoms go largely untreated**A probability study in urban New Zealand**

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■ **Abstract** *Background* Prior studies providing estimates of the prevalence of postnatal depressive symptoms (PNDS) in New Zealand have been hampered by methodological shortcomings. Aims of this study were to derive an accurate estimate of PNDS prevalence and treatment frequency in an urban population of a major city in New Zealand. *Method* This was a one-wave postal survey of a probability, community sample of all women in Auckland who were 4 months postpartum. PNDS was assessed with the Edinburgh Postnatal Depression Scale (EPDS). *Results* There were 225 usable responses (78% response-rate): 36 women (16.0%) scored above the threshold for depressive symptomatology, and nine of them were in treatment. A further 31 women (13.8%) scored just below the threshold region for depressive symptomatology, and none were in treatment. *Conclusion* The prevalence rate of PNDS in urban New Zealand is slightly higher than the world-wide average, and goes largely untreated in the community. Health care providers should remain vigilant to the finding that almost one

in three mothers with infants is suffering with symptoms of depression and may need strong encouragement to admit they need help.

■ **Key words** depression – postnatal – prevalence – treatment – New Zealand

Introduction

Postnatal mental illness afflicts a substantial minority of women following childbirth and also has the potential to adversely affect the mental, emotional and physical development of the infant and other children [1–5]. With treatment, an episode usually resolves in about 6 weeks [6], but getting depressed women into treatment is difficult; reportedly fewer than 40% seek help [7].

A number of postnatal depression (PND) and postnatal depressive symptoms (PNDS) prevalence studies have been conducted, primarily in North America and the United Kingdom, but there is a lack of information for New Zealand. National statistics help to guide the development and distribution of services for addressing local needs. Prior New Zealand epidemiological studies [8, 9] have found the prevalence rate of major depression in the general population to be significantly higher than overseas, but the question of whether this holds true also for PND and PNDS remains unclear. Two prior New Zealand studies of PNDS, both employing the same population-specific measure (Edinburgh Postnatal Depression Scale—EPDS), [10] reported widely divergent rates: 13% [11] vs. 7.8% [12]. The difference in prevalence rates likely results from methodological issues, in particular, assessment and sample characteristics. Timing of assessment is important, as studies that assess symptoms within the first few weeks postpartum (e.g., Webster et al.) are likely contami-

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nated with transient factors related to normal postpartum adjustment, and also likely to underestimate prevalence rate because peak inception of new cases continues at least through the first 12 weeks postpartum [13]. With later assessments (e.g., 8–9 months: McGill et al.), questions arise as to (1) the number truly linked to childbirth, and (2) early-onset cases already resolved. A second factor influencing prevalence estimates is the criteria employed to determine case-ness. Although validation studies have established the cut-off score for PNDS on the EPDS at 12/13 [10], studies that employed a higher cutoff (e.g., McGill et al.) would be expected to underestimate true prevalence. Another issue is the use of instruments within populations for whom they have not been validated. Although the EPDS has been well-validated among Europeans, little is known about its behavior when used with New Zealand ethnic minority groups such as Maori, Asians, and Pacific Islanders. Cultural differences between Europeans and non-Europeans, particularly in the conceptualization of symptoms associated with mental illness, are often distinct [14–17], casting doubt on the validity of the EPDS in these sub-samples. Finally, it is crucial that a representative sample be obtained in order that the study findings can be generalized or inferred to the target population. This generally requires random (or census) sampling, a reasonable response rate and bias analysis [18]. In studies (e.g., McGill et al.) where the authors failed to describe the number or characteristics of women who were approached but from whom consents were not obtained, and/or recruits who ultimately failed to respond, it is impossible to estimate if the sample is representative because an evaluation of the size and effect of self-selection and non-response biases cannot be made.

We set out to determine the prevalence and frequency of treatment of PNDS, employing methodology aimed at overcoming the limitations outlined above. We timed the assessments so as to avoid the confounding influence of peripartum adjustment, yet close enough to childbirth for depressive symptoms to be classified reliably as being peripartum-related. We employed the EPDS according to specification, made stringent efforts to obtain a representative sample, and undertook detailed bias analyses in order to characterize the sample.

Design and sample

This was a descriptive study based on a one-wave, postal survey. The cohort included all women living in the Greater Auckland Metropolitan Region (GAMR) aged 18 or older, who were 4 months postpartum in April 1999. Auckland is a modern, urbanized city of over one million people. The choice of the postpartum time-point for sampling was driven by the desire to sample women during the peak prevalence period,

and to maximize the accurate classification of PNDS by sampling later than 5 weeks postpartum and earlier than 6 months postpartum. A power analysis indicated that a sample of 372 was needed in order to differentiate between women with depressive symptoms and women without, with a high level of precision. Assuming a minimum 50% response-rate, a cohort of 744 women was approached. In order to safeguard patient privacy, the design of the sampling list and distribution of the survey was undertaken by the health insurance company, which reimburses caregivers for all perinatal care provided in this country. The list contained each woman who had given birth in hospital after a target date, until the required number of names was obtained. Women who had experienced stillbirth, early infant death or serious complications at delivery were excluded. In order to enhance response rate, a reminder package was mailed 3 weeks after the initial mailing, and the study was publicized at mother–infant health clinics in the study region. Ethics approval was obtained from Auckland Healthcare Services.

Instrument

The survey package was personally addressed to each woman and included a cover letter which outlined the purpose of the study from a resilience perspective and emphasized the importance of her participation in terms of helping us understand factors which might help future mothers cope with the stresses associated with having a new baby. The letter also provided the contact information for the primary investigator and her supervisor. The package included a number of self-report instruments (to be completed anonymously) including the EPDS and questions about demographic and background characteristics. The 10-item EPDS [10] has been used widely in PND/PNDS research and has performed better than traditional screening instruments. The instrument takes less than 5 min to complete, and has also achieved good results when sent by post [19]. The items ask about the last 7 days; for example: “I have been able to laugh and see the funny side of things”. There are four response choices indicating how much the subject agrees with the statement, with a score range of 0–3, so that composite scores range from 0 to 30. The authors validated the scale by comparing the mean EPDS scores with RDC diagnosis at 3 months postpartum [10]. A score of 13 or more was found to identify all women with an RDC diagnosis of Definite Major Depressive Illness with a sensitivity of 86% and a specificity of 78%. Using a cutoff of 9/10 included women with Minor Depressive Illness. Although it cannot be assumed that these parameters hold when the timing of assessment is later than 3-months postpartum, at least two studies which addressed this issue [20, 21] concluded there is little change across at

Table 1 Mean age, number of prior children, education, and social class ($N = 225$ except where otherwise indicated)

	<i>M</i>	<i>SD</i>	Range	
			Lower	Upper
Age: mother, yr.	31.94	4.73	19.4	41.4
Age: baby, mo.	4.47	.31	3.90	5.00
Children: number	1.76	.87	1.00	5.00
School leaving yr:mother	16.95	1.27	14.00	22.00
School leaving yr:father ^a	17.05	1.54	14.00	22.00
Social class (I–VI)	2.92	1.06	1.00	6.00

^a $N = 224$ due to missing data

least the first 7 months. Still, the EPDS is a screening tool, and while it can identify high scorers it cannot be assumed that those scoring high are depressed, and it cannot diagnose depression. Treatment was assessed with one item: “Are you currently receiving any medical or psychological care or treatment for nerves, or depression, or any type of emotional or mental problem?” (Response choices: Yes or No).

Results

The statistical analysis package used was SPSS [22]. The data were verified and extensive cleaning and checking were undertaken using programs developed to check on range and consistency, following the procedure recommended by Tabachnick and Fidell (1996) [23]. Inconsistencies were found in two interviews and those cases were discarded, leaving 322 usable responses. The within-group response-rates for each ethnic group were as follows: European/Caucasians: 78%; Maori: 18%; Pacific Islanders: 40%; Asians: 57%; and Mixed/other: 7%. An analysis of responder bias found that the 97 non-European women were non-representative of their respective ethnic groups, being substantially more highly educated and more frequently in outside employment. Furthermore, there was concern about scale reliability among participants for whom English was a second language, or where cultural beliefs or attitudes might invalidate the scale (for reasons noted above). Therefore, in order to achieve a representative sample all non-Europeans were excluded from the study. All women remaining in the study sample ($N = 225$) described their ethnicity as European/Caucasian/*Pakeha*. Comparison of the group with depressive symptoms vs. the group without symptoms was undertaken with *t*-tests of analysis of unequal variances. The mean postpartum time-point was 4.47 months ($SD = 0.31$). The demographic and background characteristics of the sample are provided in Tables 1 and 2.

For 105 women (47%) this was their first child; for 80 women (36%) this was their second; for 29 women (13%) this was their third child. For 10 women, this was their fourth, and for 1 woman, this was her fifth child. The procedure employed for deriving the socio-

Table 2 Social class, marital status, employment, treatment, and caregiver ($N = 225$ except where otherwise indicated)

	<i>n</i>	%
Class		
I	18	8.0
II	48	21.3
III	118	52.4
IV	25	11.1
V	9	4.0
VI	7	3.1
Married	172	76.4
De factor (partnered)	35	16.0
Divorced	1	0.4
Single	7	3.1
Unknown status	10	4.0
Employed ^a > 30 h	26	11.6
In treatment (mental health)	11	4.9
Lead maternity caregiver		
Doctor/Ob-gyn.	94	41.7
Midwife	128	57.0
Joint:doctor–midwife	3	1.3

^a $N = 224$ due to missing data

economic status was from Johnston (1983) [24]. Cronbach's α for the EPDS was 0.87. Scores ranged from 0 to 21 with a mean of 7.45 ($SD = 5.08$). Prevalence rate and confidence intervals were computed by the Wilson method as outlined in Altman et al. (2000) [25]. There were 36 women scoring above the threshold for depressive symptomatology ($EPDS \geq 13$) yielding a prevalence rate of 16.0% (95% $CI = 11.8$ – 21.4%), and 25% of those women ($N = 9$) reported they were in treatment. The proportion of women scoring just below the threshold ($EPDS 10$ – 12) was 13.8% (95% $CI = 10.0$ – 18.9%), none of whom reported they were in treatment. Two women who scored well below the threshold for depressive symptomatology reported that they were receiving treatment. Analysis of variance found no difference between the group with depressive symptoms and the group without depressive symptoms on the age of mothers or on other demographic characteristics (Table 3), although the failure to detect differences may reflect Type II errors.

Discussion

The study findings should be understood in light of several limitations. Although extensive research over the last two decades, including postal surveys, has established that the EPDS achieves good results [19, 26], defining case-ness is not a simple matter in general, and more particularly in community samples responding to screening instruments administered in postal surveys. Our EPDS scores could not be validated by diagnostic interview (because the survey was conducted anonymously to protect the privacy of participants), and therefore we cannot assume that those scoring high were depressed. Furthermore, be-

Table 3 Mean, standard deviation, and *t*-test of difference in group means for depressive symptoms and for demographic characteristics

	Depressive symptoms (<i>N</i> = 36) <i>M</i> (SD)	Non-depressive (<i>N</i> = 189) <i>M</i> (SD)
Depressive symptoms***	16.33 (2.59)	5.75 (3.41)
Age of baby ^{ns}	4.43 (0.32)	4.47 (0.31)
Age of mother ^{ns}	31.34 (4.85)	32.06 (4.72)
Number of children ^{ns}	1.89 (1.06)	1.74 (0.83)
Social class (I–VI) ^{ns}	3.17 (1.38)	2.91 (1.04)

****P* < 0.001. ns; non-significant. Two-tailed tests.

cause the EPDS asks about current symptoms, some responders may have already recovered by the average time of response to the survey (i.e., 4.5 months postpartum). Second, surveys in general can suffer from non-responder biases, which are difficult to estimate; for example women with PNDS may be less motivated to respond than well women, and respondents with higher SES may be more motivated to respond. Third, we made assumptions (e.g., a common response rate for all ethnic groups) in calculating the study power and sample size which turned out to be underestimates, and which limited the precision of the estimate obtained, a lesson future New Zealand studies of this type should heed. Fourth, non-Europeans were excluded from the sample because low within-group response rates raised concern that self-selection bias may have yielded the sample non-representative, compounded by concern that cultural differences in interpretation of the anglo-centric instruments may have reduced the reliability of the study findings. Consequently the results cannot be generalized to non-Europeans.

The finding that there was no difference on average between the group of women with depressive symptomatology and the group without in terms of the women's age, social class, number of children or education level is in line with prior work [e.g., 27]. The prevalence rate estimated was 16%, which is well within the established range of 10–20% coming from overseas studies, but a little higher than found in the meta-analysis conducted by O'Hara and Swain (1996) [26] of 59 PND/PNDS studies world-wide and which concluded the overall prevalence was 13%. It would appear that our findings are consistent with those of Wells et al. (1989) [8] and Oakley Brown et al. (1989) [9] who found the rate of general major depression in New Zealand was significantly higher than in other countries. A further 14% of postpartum women in the current study scored just below the threshold for depressive symptomatology. This is important because minor depressive symptoms are associated with co-morbid anxiety and other disorders, and over time a substantial number will convert to major depression. In at least 50% of cases, episodes of depression are recurrent throughout the childbearing years [28].

These findings beg the question of why postnatal depression symptomatology rates should be elevated in New Zealand. Romans-Clarkson et al. (1988) [29] suggested that PND ought to be *lower* in New Zealand because motherhood is a stronger norm here than in other countries and because few married women work outside the home. They described the experience of motherhood in New Zealand as different from other countries such as Great Britain, possibly due to what commentators have described as a unique culture resulting in sharply gender-differentiated social roles. It was suggested that the motherhood role enhanced self-esteem through social status and also reduced social isolation. Today, one possible implication of such gender divisions is that they may be confining women in roles that are no longer satisfying, contributing to both personal frustration and marital discord, one of the leading risk factors for PND/PNDS.

Postnatal depressive symptoms are very treatable. Nonetheless, only 13% of the 67 women scoring in the threshold or high range of the EPDS were in treatment. It is important to get women into treatment because negative mental health outcomes in offspring may be more severe when maternal depression is prolonged [30]. It is not a straightforward matter, however, to identify and bring women into treatment. Although PNDS often have roots in pregnancy and a substantial proportion of episodes begin prior to delivery [31, 32] there continues to be resistance to discussing mental illness and employing the EPDS antenatally [11, 33]. During and after delivery there is more frequent contact with the health care system, but the infant's health is the primary focus of health-care workers, perhaps limiting the attention paid to the mother's needs. Some 20% of cases have their inception later than the routine 6-week postpartum check-up [32]; after that time contact with health workers and community support tends to diminish. Meanwhile, the social stigma attached to the image of a mother who cannot cope with the needs of her infant contributes to the reluctance of many to admit they are unwell and/or unable to cope [34]. Health workers and family members in contact with expectant and new mothers need to be vigilant. In a sociocultural context where pregnant and new mothers may feel they should hide negative emotions and difficulties with coping [35, 36], depressed women may need strong encouragement to admit they need help. Our findings underline the importance of routine screening for PNDS.

Conclusions

This probability, community survey of European/Caucasian women at 4 months postpartum found that 30% were suffering from depressive symptomatology and only 13% of those were in treatment. These

findings indicate both that PNDS is prevalent in New Zealand and inadequately addressed; routine screening is warranted.

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