8. Guyer B, Talbot AM, Pless IB. Pedestrian injuries to children and youth. *Pediatr Clin North Am* 1985; **32**(1): 163-174.
9. Rivara FP, Barber M. Demographic analysis of childhood pedestrian injuries. *Pediatrics* 1985; **84**(6): 375-381.
10. Pless IB, Peckham CS, Power C. Predicting traffic injuries in childhood: a cohort analysis. *J Pediatr* 1989; **115:** 932-938.
11. Rivara FP, Bergman AB, Drake C. Parental attitudes and practices toward children as pedestrians. *Pediatrics* 1989; **84:** 1017-1021.
12. Robertson LS, Kelley AB, O'Neill B, Wixom CW, Eiswirth RS, Haddon W. A controlled study of the effect of television messages on safety belt use. *Am J Public Health* 1974; **64:** 1071-1080.
13. Tanz RR, Christoffel KK. Pedestrian injury: the next motor vehicle injury challenge. *Am J Dis Child* 1985; **139:** 1187-1190.
14. Ampofo-Boateng K, Thompson JA. Children's perception of safety and danger on the road. *Br J Psychol* 1991; **82:** 487-505.
15. Michon JA. Traffic education for young pedestrians: an introduction. *Accid Anal Prev* 1981; **13:** 163-167.
16. Rivara FP. Child pedestrian injuries in the United States. *Am J Dis Child* 1990; **144:** 692-696.
17. Eichelberger MR, Gotschall CS, Feely HB, Harstad P, Bowman LM. Parental attitudes and knowledge of child safety. *Am J Dis Child* 1990; **144:** 714-720.
18. Schor EL. Unintentional injuries: patterns within families. *Am J Dis Child* 1987; **141:** 1280-1284.
19. *Health on the Move: Policies for Health Promoting Transport.* Birmingham: Public Health Alliance, 1991.
20. Avery JG, Avery PJ. Scandinavian and Dutch lessons in childhood road traffic accident prevention. *BMJ* 1982; **285:** 621-626.
21. Appleyard D, Lintell M. The environmental quality of city streets: the residents' viewpoint. *Journal of Accident and Injury Prevention* 1972; **3:** 84-101.
22. Klein D. Societal influences on childhood accidents. *Accid Anal Prev* 1980; **12:** 275-281.

Postnatal depression — an examination of psychosocial factors

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Postnatal depression (PND) has been underreported in South Africa. This retrospective study investigated factors which appear to predispose women to PND. Two groups, one consisting of women who suffered from PND and the other of women free of this complaint, provided information on a number of biological, psychological and social factors. In line with current opinion it was found that no single causative factor could be isolated but that a variety of factors may contribute to the problem. Among the factors which distinguished the two groups were the mothers' emotional health during pregnancy, complications after birth, marital relations, relationship with their own mothers, social support and preparation for motherhood. An alarming finding was that a large proportion of the PND sufferers had not known of the disorder's existence before their own diagnosis.

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Postnatal depression (PND) is a depressive illness that develops up to 1 year after the birth of a child. It varies in intensity, but is distinguished from 'baby blues', which is a mild depressive state usually associated with the onset and establishment of lactation. PND is also distinguished from postpartum psychosis, which is a severe condition that usually includes hallucinations or other psychotic symptoms. It is a widespread phenomenon,[1] affecting women of all social classes. The disorder seriously interferes with a woman's ability to function and has profound effects on the infant, the family and the woman herself. Prevalence studies estimate that 10 - 15% of postpartum mothers are affected.[2,3] Despite considerable research, no single causative factor has been isolated, but current thinking suggests that there is an interaction between biological factors, psychodynamic issues, cognitive patterns and situational stress.[4,5]

The link between biological factors and PND remains controversial. It is proposed that changes in hormone levels postpartum may be a factor, although the evidence remains inconclusive.[6-8] Premenstrual syndrome,[9,10] and breast-feeding and weaning[11] may also play a role.

The possibility of a genetic basis for postnatal depression was suggested by a number of studies which found that there is a one-in-three risk of developing postnatal mental illness if there is a previous history of psychiatric disorder in the family, particularly in the mother.[12] Other authors, however, suggest that there may be an interplay of genetic factors (of biological origin) and other psychodynamic factors related to the birth situation that predispose mothers to depression.

Psychodynamic factors essentially involve the woman's relationship with her own mother. If the woman herself was inadequately mothered, she may experience conflict in her own maternal functioning. This conflict may cause the woman to question her own desire or ability to mother her infant satisfactorily. The hostility experienced by the new mother in this situation may then be projected onto her infant.[1] Again, results are inconclusive; some authors[13,14] found no association between the nature of a woman's relationship with her own mother and her PND. However, women who have experienced physical, sexual or emotional abuse in the past tend to be vulnerable to depression postpartum.[5]

The cognitive theory of 'learned helplessness' has been proposed as an explanation of depression.[15,16] The new mother who is unsuccessful in comforting her baby may believe that she is incapable and useless. Learned helplessness and evidence of passive coping and external locus of control have been observed in depressed mothers.[17] It has been suggested[18,19] that depression occurs because the mother has a negative perception of the environment and of herself. This becomes a self-perpetuating cycle, affecting cognition, affect and behaviour.

Cognitive theorists also propose that personality characteristics predispose certain women to PND. Anxious, perfectionist, controlling and compulsive individuals are considered to have unrealistic expectations about their parenting ability, and when they fail to meet these expectations they may experience feelings of guilt, failure and inadequacy.[8] Trait anxiety and fear of the birth process during pregnancy have also been found to predict

postpartum depression accurately.[20] Knight and Thirkettle,[20] while acknowledging that both biological and psychological factors play their part, suggest that women who are not adequately prepared for childbirth may be vulnerable.

The role of situational stress and social support factors in the aetiology of various conditions is increasingly being recognised. Factors such as the mother's loss of an occupation or career-based identity,[21] and inadequate support from significant others[22] during this 'developmental crisis' have been investigated. One of the more consistent findings within the social support literature in PND is the importance of a satisfactory marital relationship.[14,23] A number of studies have found that marital dissatisfaction predicted PND.[13,17,24,25] However, these findings need to be interpreted with caution as the depression may have caused a deterioration of the marital relationship, rather than the reverse.

The occurrence of major life changes or stressful events around parturition have been implicated in PND.[8,26,27] Some studies have found that life stress experienced during pregnancy predicted postnatal symptom levels,[24] and that women with PND reported more stressful life events and less spouse support;[28] though others have found no relationship between life-event stress, social support and depression in mothers postpartum.[29]

Finally, some researchers have proposed that the infant may represent a source of stress for the new mother. Premature infants,[30] high-risk infants[29,31] and infant temperament[32,33] have been implicated in the development of PND. However, it is important to note that depression may influence maternal perception of the infant as temperamentally difficult.[32]

The aim of this study was to explore some biological, psychological and social factors which may be implicated in the aetiology of PND in the South African context. Given the prevalence of PND, the lack of consistent research findings in this area and the paucity of research in South Africa on this syndrome, a study of this nature was deemed extremely important.

Method

Subjects

Ninety-five white, middle-class, married mothers living in the greater Cape Town area were the subjects of this study. These consisted of 2 groups, an index (PND) and a control group. The index group comprised 47 mothers who were currently receiving or had (in the past 2 years) received treatment for PND, which involved antidepressant medication, psychotherapy, group support or a combination of all three. This sample of women was drawn from a support group for women with PND; 19% were participating in the group at the time of this study, while 81% had participated in the group in the recent past.

The control group initially comprised 48 mothers who volunteered to participate in a study investigating 'adjustment to motherhood' in response to an appeal printed in a local magazine and newspapers. Eight of these women were excluded from the study when it emerged that they had been treated for PND; this left a final sample of 40.

There were no significant differences between the mothers in the two groups in respect of their age, marital status and educational status, though mothers in the index group tended to be slightly older than those in the control group. Most of the women (94,25%) were married and 70,11% had received tertiary education. However, the age of the youngest child was a factor that distinguished the groups. The mean age of the youngest child of the PND group was 30,6 months, while that of the control group was 9,6 months.

Material

The questionnaire contained items on issues highlighted in the literature, as well as a selection of psychometric tests. The Holmes-Rahe Life Stress Inventory[34] and the full Beck Depression Inventory[35] were included, as well as two checklists in current use at the Parent Centre. The checklist tapping depressive affect allowed a score between 0 and 70, and the checklist tapping depressive symptomatology a score between 0 and 100; in both cases the higher the score, the more depressed the subject. The questionnaire took approximately 30 minutes to complete.

The questionnaire had been piloted on 10 women with PND and 5 women with no evidence of depression prior to the study.

Procedure

All women who responded to the various requests for subjects were mailed a questionnaire and a self-addressed stamped envelope. A covering letter assured them of the confidential nature of the research, guaranteed anonymity and thanked them for their participation. The responses on the questionnaires were analysed, comparing the two groups using either a chi-square (χ^2) test of contingency (when the responses consisted of categorical data) or Student's *t*-test (when the data were continuous).

Results

Biological and health issues

The relationship between PND and a number of other psychobiological factors was considered by comparing the incidence of these factors in the PND group with that in the control group (Table I).

Subjects suffering from PND did not have a disproportionate history of depression. However, more of these subjects reported having mothers who had a history of depression than did subjects in the control group ($\chi^2 = 6,874$; $P = 0,009$).

There appears to be a link between PND and premenstrual tension after, but not before, the pregnancy. There was no difference in the degree of premenstrual tension suffered by women in the two groups before pregnancy, yet there was a significant difference in the degree of premenstrual tension suffered since pregnancy ($\chi^2 = 16,657$; $P = 0,001$).

Table I. Health and biological factors (%)

	PND group	Control group
Depression other than PND*		
Never	44,4	39,5
Before adolescence	13,0	2,6
During adolescence	23,9	25,6
During adulthood	37,0	36,8
Mothers with a history of depression†		
Suffered	46,8	20,0
Premenstrual tension before pregnancy*		
Severe	14,9	5,0
Moderate	27,7	25,0
Mild	27,7	40,0
None	29,8	30,0
Premenstrual tension after pregnancy†		
Severe	27,7	0,0
Moderate	21,3	25,6
Mild	25,5	18,0
None	25,5	56,4
Health during pregnancy*		
Very good	73,9	75,0
Moderately good	13,0	12,5
Only fairly good	8,7	10,0
Not at all good	4,4	2,5
Emotional health during pregnancy†		
Cheerful	78,7	95,0
Dissatisfied/miserable	21,3	5,0
Complications after birth†		
Suffered	38,3	17,5
PND after a previous pregnancy†		
Experience for > 6 wks	44,0	8,3
Experience for < 6 wks	24,0	16,7
No depression	32,0	75,0

*Not statistically significant ($P > 0,1$).
† Statistically significant ($P < 0,05$).

No differences in health or complications during pregnancy distinguished the two groups, though there was a significant difference in the emotional health of the groups during pregnancy ($\chi^2 = 4,815$; $P = 0,028$). There was also a significant difference in the number of subjects who had medical complications after the birth ($\chi^2 = 4,564$; $P = 0,033$).

PND itself appears to have a recurrent quality. Of the subjects in the index group who had experienced a previous birth, 68% had suffered previous PND. Only 25% of the control group had suffered any depression ($\chi^2 = 6,644$; $P = 0,036$).

Marital relationship

On average, women in the PND group had been married longer than those in the control group ($t = 2,45$; $P = 0,016$), though this was probably a function of the difference in ages (Table II). There was also a difference in the composition of the families ($\chi^2 = 15,908$; $P = 0,001$) with the women in the PND group having more children, most of them under the age of 7 years.

The results indicate that the marital relations of subjects in the PND group were more problematic than those of the subjects in the control group. More of these women reported that their partners tended to withdraw from conflict situations, both physically ($\chi^2 = 3,8003$; $P = 0,051$) and emotionally ($\chi^2 = 7,829$; $P = 0,005$). There also appeared to be a lack of communication and consensus in the marriages. More subjects in the index group than the control group said they were unable to discuss their feelings with their partner ($\chi^2 = 5,078$; $P = 0,079$), and hence expressed their anger behaviourally ($\chi^2 = 3,958$; $P = 0,047$). A problematic marital relationship did not appear to be a function of the pregnancy or birth of the child.

Table II. Marital relationship

	PND group	Control group
Length of time married (yrs)*	6,7	4,5
Number and age of children*		
2 or more children	56,2%	15,0%
Children < 7 yrs old	55,3%	10,0%
Husband/partner's work habits†		
Long hours	59,6%	38,5%
Husband/partner's way of handling anger*		
Avoids the situation	42,6%	15,0%
Ability to discuss feelings with partner†		
Able to discuss feelings	23,4%	48,2%
Subject's way of handling anger*		
Shouts, behaves angrily	63,8%	42,5%
Desire for the baby*		
By both parents	76,6%	92,5%
Husband/partner's support during labour*		
Not helpful	12,8%	0,0%

* Statistically significant ($P < 0,05$).
†Tends toward significant ($P < 0,1$).

Most of the women reported that their baby was planned, but the desire for the child was not necessarily shared by both parents in the index group ($\chi^2 = 4,048$; $P = 0,044$). This lack of consensus was further demonstrated in that more subjects in the PND group than the control group reported that they found their partner's presence during the birth unhelpful ($\chi^2 = 5,087$; $P = 0,024$).

Relationship with mother

Subjects in the PND group appeared to have a more difficult relationship with their mothers than subjects in the control group (Table III). This was evident in the way the subjects described their relationships with their mothers ($\chi^2 = 12,244$; $P = 0,002$), and by their inability to discuss feelings with her ($\chi^2 = 6,709$; $P = 0,082$). PND subjects felt unable to turn to their mothers for direct advice about the baby ($\chi^2 = 8,774$; $P = 0,003$), for referral to books ($\chi^2 = 4,391$; $P = 0,036$) or other resources ($\chi^2 = 5,150$; $P = 0,023$), or for help in general ($\chi^2 = 3,666$; $P = 0,056$). The emotional distancing from their own mothers may possibly be related to the finding that many of the mothers in the PND group suffered from depression.

This distance in their relationship with their mothers appeared to affect their mothers' relationship with the babies. This relationship is described more negatively by the PND group than the control group ($\chi^2 = 8,405$; $P = 0,038$), exemplified by reports that the PND subjects' mothers relieve them of the baby less than do the control group's ($\chi^2 = 5,827$; $P = 0,016$).

Table III. Relationship with mother (%)

	PND group	Control group
Relationship with mother*		
Warm and friendly	40,0	78,4
Rather distant	24,4	8,1
Tense, difficult	35,6	13,5
Ability to discuss feelings with mother†		
Impossible to do	40,0	18,8
Mother's helpfulness*		
Advice	51,2	84,4
Referral to books	7,3	25,0
Referral to resources	24,4	50,0
General help	46,3	68,8
Relief with baby	26,8	54,8
Mother's relationship with baby*		
Over-involved	2,4	6,5
Warm and caring	61,0	87,1
Under-involved	34,2	6,5

* Statistically significant ($P < 0,05$).
†Tends toward significant ($P < 0,1$).

Isolation and support

Becoming mothers often results in women experiencing a loss of the identity which they had as a function of their work or other activities, and a sense of becoming socially isolated (Table IV).

Table IV. Isolation and support (%)

	PND group	Control group
Employment*		
Part-time	34,0	30,0
Full-time	12,8	12,5
Not working	53,2	57,5
Feelings of self-esteem†		
Lack of self-confidence	76,6	27,5
Self-esteem related to giving up work†		
Loss of status	60,0	35,0
Age of baby when returned to work‡		
< 3 mo.	4,8	28,6
3-6 mo.	28,6	42,9
6-9 mo.	23,8	9,5
> 9 mo.	42,9	19,1
Feelings of social isolation†		
Endorsed by	80,9	40,0
Help with the baby†		
Insufficient	76,6	55,0
Source of childcare‡		
Domestic workers	50,0	17,7
Relatives	13,6	41,2

* Not statistically significant ($P > 0,1$).
† Statistically significant ($P < 0,05$).
‡ Tends toward significant ($P < 0,1$).

Work did not emerge as an important factor in distinguishing the two groups. There was no difference in the numbers who were or were not employed. However, more of the PND subjects than control subjects reported that they lacked self-confidence ($\chi^2 = 20,970$; $P = 0,000$), and attributed this to having stopped work ($\chi^2 = 5,226$; $P = 0,022$). Despite this, there was a tendency for subjects in the control group to return to work earlier than those in the PND group ($\chi^2 = 7,38$; $P = 0,061$), but this was possibly related to the fact that more of the PND subjects had other young children to look after, or may in itself have been a consequence of the depression. On the other hand, returning to work is reported to alleviate PND in some women.

Considerably more subjects in the PND group than the control group report that they felt socially isolated ($\chi^2 = 15,317$; $P = 0,000$). There were also some indications that subjects in the PND group received less support than those in the control group. More PND subjects than control subjects stated that they had insufficient help with the baby ($\chi^2 = 4,535$; $P = 0,033$). Furthermore, of the subjects who returned to work, more of the control group relied on relatives for child care ($\chi^2 = 3,07$; $P = 0,080$), while more of the PND group had to rely on domestic workers ($P = 0,057$).

Preparation for and experience of motherhood

Subjects in the PND group appear to have been less adequately prepared for motherhood than those in the control group (Table V). Significantly more PND subjects stated that they had not been adequately prepared for

Table V. Preparation for and experience of motherhood (%)

	PND group	Control group
Parenting*		
Inadequate preparation	85,1	15,6
Changes in their relationship with partners*		
Inadequate preparation	61,7	35,0
Unrealistic expectations of motherhood*		
Endorsed by	83,0	30,0
Knowledge about postnatal depression*		
No knowledge prior to child's birth	36,2	10,0
Endorsed as contributing to adjustment problems	51,6	2,5
Enjoyment of mothering*		
All the time	31,9	67,5
Most of the time	57,5	32,5
Some of the time	10,6	0,0
Stage at which bonding with baby occurred*		
Soon after birth	57,5	77,5
1-2 mo.	4,3	12,5
2-4 mo.	8,5	5,0
4-6 mo.	6,4	0,0
6-9 mo.	10,6	2,5
> 9 mo.	10,6	0,0
Not yet	2,1	2,5
Age of child when started to enjoy mothering*		
< 2 wks	25,3	50,0
2-4 wks	4,3	10,0
4-8 wks	6,4	15,0
> 8 wks	55,3	25,0
No enjoyment	8,5	0,0
Levels of coping*		
Well	19,6	45,0
Quite well	43,5	55,0
Quite badly	28,3	0,0
Extremely badly	8,7	0,0
Loss of control with the baby†		
Endorsed by	76,6	40,0
Manifestations of loss of control†		
Handled baby roughly	36,2	17,5

* Statistically significant ($P < 0,05$).
† Tends towards significant ($P < 0,1$).

parenting (χ^2 = 42,634; P = 0,000), that they had not been prepared for the changes in their relationships with their partners (χ^2 = 6,146; P = 0,013), and that they had had unrealistic expectations of motherhood (χ^2 = 25,004; P = 0,000). Most noteworthy was the fact that significantly fewer PND than control subjects had heard of PND before the birth of their baby (χ^2 = 8,772; P = 0,012). Significantly more PND subjects than control subjects (χ^2 = 24,887; P = 0,000) considered this lack of knowledge a contributing factor affecting their adjustment to motherhood.

The groups also differed in their experiences of motherhood. More subjects in the control group than in the PND group enjoyed mothering all of the time (χ^2 = 12,849; P = 0,002) and started to enjoy it earlier in the baby's life (χ^2 = 14,307; P = 0,006). There was also a significant difference between the groups in their experience of bonding with the baby — the control subjects bonded earlier than the PND subjects (χ^2 = 12,412; P = 0,053).

The two groups differed in their assessment of their present coping levels, the PND group evincing a lower level (χ^2 = 19,773; P = 0,000), although their children were older. A considerable proportion of the control group (75%), in contrast to 93,6% of the PND group, reported that there was a time when they had not coped. Clearly, all those in the control group recovered or learned to cope, while a sizeable proportion of the PND group did not. These feelings of non-coping appear to affect their handling of their children. More PND subjects than control subjects reported that they had lost control of themselves with the baby (χ^2 = 3,615; P = 0,057), and more PND subjects admitted that they had handled the baby 'roughly' (χ^2 = 2,894; P = 0,089).

Experience of depression

A number of psychometric scales of depression were used to assess the current state of members of the two groups (Table VI). These all confirmed that the PND group was significantly more depressed than the control group: the Beck Depression Inventory[35] (t = 7,836; P = 0,0001), the Depression Feelings Checklist (Mann-Whitney, Z = 6,974; P = 0,0001) and the Depression Symptom Checklist (Mann-Whitney, Z = 6,764; P = 0,0001). This is noteworthy as it implies that PND mothers have, on average, been depressed for a long period of time, given that the mean age of the youngest child of these mothers is 30,6 months.

There was also a significant difference in the amount of stress experienced by the two groups. On the basis of items from the Holmes-Rahe Life Stress Inventory,[34] the PND subjects' stress ratings were significantly higher than those of the control subjects (Mann-Whitney, Z = 2,112; P = 0,035). The groups also differed in their emotional reaction to stress. More PND subjects responded by becoming resentful (χ^2 = 4,212; P = 0,040). Of the major life changes listed in the questionnaire, the only one which distinguished the two groups was that of the partner changing jobs. Significantly more of the PND group endorsed this factor than did the control group (χ^2 = 5,851; P = 0,016).

The PND group's experience of depression was probed. No particular time of day emerged as the 'depressed time', although Sunday and Monday were reported as the days on which depression was more pronounced. The majority (70 - 83%) of the PND group associated their depression with being left alone, having insufficient sleep, being at home and having their husbands leave for work.

Table VI. Experience of depression*

	PND group	Control group
Measures of depression		
Beck Depression Inventory		
Mean	25,362	9,325
SD	12,897	5,096
Depression Feelings Checklist		
Mean	41,915	14,075
SD	12,818	12,968
Depression Symptom Checklist		
Mean	55,702	19,775
SD	19,956	13,863
Measure of stress		
Stress Factor Rating Scale		
Mean	8,851	6,850
SD	5,364	6,674
Emotional response to stress		
Resentment	59,6%	37,5%
Major stressful life change		
Partner's changing job	27,7%	7,5%

* All factors statistically significant (P < 0,05).

Treatment for depression

The PND subjects received help from a number of sources (Fig. 1). It appears that the subjects first confided in their general practitioner who then referred them to a psychologist, psychiatrist or counsellor. The most notable element of these results is the very low number who discussed their depression with their paediatrician. (All members of the index group consulted paediatricians for their children's illnesses.) This may be because the paediatricians are not aware of or sympathetic to the problem, or that the mothers do not perceive the problem to be connected to the baby either as a cause or a consequence. Many depressed women consult paediatricians repeatedly about often imaginary complaints of the baby when, in fact, they are the ones who need help, but are unable to ask for it.

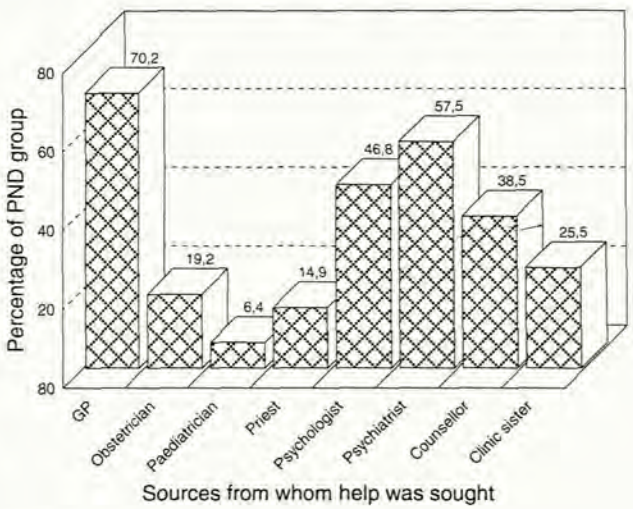

Fig. 1. Sources from whom help was sought.

PND is usually treated with a combination of psychotropic drugs and psychotherapy. The majority of the PND group (91,3%) had received medication for their depression and 76,6% had received psychotherapy.

Discussion

The results of this study support Gruen's[5] and Cox's[7] notion that PND occurs as a result of the interaction of biological factors, psychodynamic issues, cognitive patterns and situational stress.

In the PND group, 44% had experienced previous episodes of PND, which may suggest an aetiology of biological and situational origins. Furthermore, 46,8% of the PND group reported that their mothers suffered from depression, which is consistent with the findings of Reich and Winokur[12] in their work on patients with manic-depressive illness. It was interesting that there was no difference between the groups in terms of previous episodes of depression, other than PND.

Concurring with the findings of Dalton,[10] an association was found between PND and premenstrual tension in the degree of severity of premenstrual tension experienced since the birth.

The PND group showed poorer emotional health during pregnancy and more complications after the birth, compared with the control group; this may be the result of the interaction of biological and situational factors. The PND group also experienced greater stress, which might have affected them biologically. (The relationship between stress and endocrine changes is well known.)

Differences in the groups with regard to psychodynamic issues were explored. While no differences were found between the groups regarding father-daughter and sibling relationships, differences were found regarding relationships with the subjects' mothers, which tended to be 'close, but tense and difficult' and which did not allow for the discussion of depressed emotions. This is consistent with the findings of Hopkins *et al.*[8] and Dix.[21] The mothers of the subjects in the PND group were also less actively involved with the babies. This affects the degree of social and emotional support experienced by the PND mothers. The subjects in the PND group experienced greater social isolation than the control group, many of whom received support from their sisters-in-law.

Although it was expected that there would be a difference between the groups in terms of experience of early personal loss, this was not found.

Consistent with the findings of Zuckerman and Beardslee,[4] the PND group had more children under the age of 7 years than the control group, but in contrast to their findings, our research showed that the PND subjects tended to be older than subjects in the control group, and had been married for longer.

The research also provided some support for these authors'[4] finding that women with PND had poor marital relationships. The husbands/partners of the PND group were perceived to work longer hours and to be absent more often and less available than those of the control group. Exploring the role of anger management in the two groups, it was found that in the PND group the women tended to act out their anger, while their partners withdrew from the situation, whereas generally the partners of the women in the control group were able to discuss their feelings openly. The PND group reported that their anger management patterns repeated those of their parents, which was not the case in the control group. In reaction to stress, the majority of the PND group said that they became resentful. The role of anger management in the development of PND needs to be explored further.

The literature indicates a connection between stressful life events and depression after the birth of a child.[8,26,28] The groups differed regarding recent, presumably stressful, major life changes, particularly in that a significant number of the partners of the PND group had recently changed jobs. There is a possible connection between this and the perception by these subjects that their partners worked long hours.

The presence of their partners seemed to be a significant factor in the development of depression. The PND group found their depression to be exacerbated when their partners left for work each day. In contrast to this, the whole weekend, or Sundays and Mondays, were experienced as particularly difficult days, followed by Saturday and Friday. This may be the result of unrealistic expectations of being together as a family when, in fact, the weekend turned out to be disruptive to routines, or to be a time when the partner engaged in private activities leaving the mother alone with the baby.

Unrealistic expectations of the changes brought about by having a baby seem to be an important issue. The PND group reported that they were unprepared for changes in the marriage and inadequately prepared for parenting. Furthermore, the majority of subjects in the PND group learned about PND only after the baby was born. This suggests a need for greater and more realistic preparation for parenthood by childbirth educators and possibly also obstetricians and general practitioners. Many women who repeatedly consulted paediatricians were not diagnosed by the latter as having PND, which often manifests itself in excessive anxiety about the health and care of the baby.

The change in women's identity in becoming mothers often results in a loss of confidence in themselves; this was reflected in the scores of the PND group, who also indicated that they missed the status they had previously enjoyed by virtue of their employment outside the home.

While there was no difference between the groups in terms of temperamental or other difficulties in managing the babies, in contrast to the findings of Whiffen[32] bonding took place later in the PND group than in the control group. The gender of the child, whether it was full-term or premature, or whether it was delivered vaginally or by caesarean section did not distinguish the groups.

While both groups indicated that they had at times lost control of themselves in their handling of the baby, this was more prevalent in the PND group. The implications for child abuse are obvious. Clearly, women with young babies are in need of support and proper preparation for the social, emotional and physical impact of having a baby.

Conclusion

This study explored a number of the factors that may contribute to the aetiology of PND. The findings suggest that certain of these may be important but, as with all ex-*post facto* research, no causative link can be claimed. Furthermore, the research under discussion did not explore

the effect of the current unstable political and economic situation on the subjects, which is undoubtedly an additional stress factor. As the subjects in the research were white, predominantly middle-class women, the findings cannot be generalised to other ethnic or socio-economic groups. The study highlights the need for further research in this area, and suggests some of the factors that should be considered.

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REFERENCES

1. Cox JL. *Postnatal Depression: A Guide for Health Professionals.* Edinburgh: Churchill Livingstone, 1986.
2. Cohn JF, Campbell SB, Matais R, Hopkins J. Face-to-face interactions of postpartum depressed and non-depressed mother-infant pairs at 2 months. *Developmental Psychology* 1990; **26:** 15-23.
3. Gotlib IH, Whiffen VE, Mount JH, Milne K, Cordy NI. Prevalence rates and demographic characteristics associated with depression in pregnancy and the postpartum. *J Consult Clin Psychol* 1989; **57:** 269-274.
4. Zuckerman BS, Beardslee WR. Maternal depression: a concern for pediatricians. *Pediatrics* 1987; **79:** 110-117.
5. Gruen DS. Postpartum depression: a debilitating yet often unassessed problem. *Health and Social Work* 1990; **15:** 261-270.
6. Parry BL. Reproductive-related depressions in women: phenomena of hormonal kindling? In: Hamilton JA, Harberger PN, eds. *Postpartum Psychiatric Illness.* Philadelphia: University of Pennsylvania Press, 1992: 200-218.
7. Cutrona CE. Non-psychotic postpartum depression: a review of recent research. *Clinical Psychology Review* 1982; **2:** 487-503.
8. Hopkins J, Marcus M, Campbell S. Postpartum depression: a critical review. *Psychol Bull* 1984; **95:** 498-515.
9. Pitt B. 'Atypical' depression following childbirth. *Br J Psychiatry* 1968; **114:** 1325-1335.
10. Dalton K. Who is at risk? In: Dalton K, ed. *Depression after Childbirth.* Oxford: Oxford University Press, 1980: 62-72.
11. Susman VL, Katz JL. Weaning and depression: another postpartum complication. *Am J Psychiatry* 1988; **145:** 498-501.
12. Reich T, Winokur G. Postpartum psychoses in patients with manic-depressive disease. *J Nerv Dis* 1970; **151:** 60-68.
13. Dimitrovsky L, Perez-Hirshberg M, Rivkah I. Depression during and following pregnancy: quality of family relationships. *J Psychol* 1987; **121:** 213-218.
14. Pieters H, Spangenberg J. *Voorkom en Oorwin Nageboortelike Depressie.* Cape Town: Human & Rousseau, 1988: 34-58.
15. Miller WR, Rosellini RA, Seligman MEP. Learned helplessness and depression. In: Coyne JC, ed. *Essential Papers on Depression.* New York: New York University Press, 1985: 181-219.
16. Abramson LY, Seligman MEP, Teasdale JD. Learned helplessness in humans: critique and reformulation. In: Coyne JC, ed. *Essential Papers on Depression.* New York: New York University Press, 1985: 259-301.
17. Field T, Sandberg D, Garcia R, Vega-Lahr N, Goldstein S, Guy L. Pregnancy problems, postpartum depression, and early mother-infant interactions. *Developmental Psychology* 1985; **21:** 1152-1156.
18. Beck AT. *Depression: Clinical, Experimental and Theoretical Aspects.* London: Staples Press, 1967.
19. Kovacs M, Beck AT. Maladaptive cognitive structures in depression. In: Coyne JC, ed. *Essential Papers on Depression.* New York: New York University Press, 1985: 240-258.
20. Knight RG, Thirkettle JA. The relationship between expectations of pregnancy and birth, and transient depression in the immediate postpartum period. *J Psychosom Res* 1987; **31:** 351-357.
21. Dix C. *The New Mother Syndrome.* London: Unwin Paperbacks, 1987: 73-145.
22. Kraus MA, Redman ES. Postpartum depression: an interactional view. *Journal of Marital and Family Therapy* 1986; **12** (1): 62-74.
23. Stemp PS, Turner RJ, Noh S. Psychological distress in the postpartum period: the significance of social support. *Journal of Marriage and the Family* 1986; **48** (May): 271-277.
24. Whiffen VE. Vulnerability to postpartum depression: a prospective multivariate study. *J Abnorm Psychol* 1988; **97:** 467-474.
25. Cox JL, Connor Y, Kendell RE. Prospective study of the psychiatric disorders of childbirth. *Br J Psychiatry* 1982; **140:** 111-117.
26. Paykel ES, Emms EM, Fletcher J, Rassaby ES. Life events and social support in depression. *Br J Psychiatry* 1980; **136:** 339-346.
27. Rohde P, Lewinsohn PM, Seeley JR. Are people changed by the experience of having an episode of depression? A further test of the scar hypothesis. *J Abnorm Psychol* 1990; **99:** 264-271.
28. O'Hara M. Social support, life events, and depression during pregnancy and the puerperium. *Arch Gen Psychiatry* 1986; **43:** 569-573.
29. Hopkins J, Campbell SB, Marcus M. Role of infant-related stressors in postpartum depression. *J Abnorm Psychol* 1987; **96:** 237-241.
30. Gennaro S. Postpartal anxiety and depression in mothers of term and preterm infants. *Nurs Res* 1988; **37** (2): 82-85.
31. Blumberg NL. Effects of neonatal risk, maternal attitude, and cognitive style on early postpartum adjustment. *J Abnorm Psychol* 1990; **89:** 139-150.
32. Whiffen VE. Maternal depressed mood and perceptions of child temperament. *J Genet Psychol* 1990; **151:** 329-339.
33. Cutrona CE, Troutman BR. Social support, infant temperament, and parenting self-efficiency: a mediational model of postpartum depression. *Child Dev* 1986; **57:** 1507-1518.
34. Holmes TH, Rahe RH. Life Stress Inventory/'The social adjustment rating scale' *J Psychosom Res* 1967; **11:** 213-218.
35. Beck AT, Ward CH, Mendelson M, Mock J, Erbaugh J. An inventory for measuring depression. *Arch Gen Psychiatry* 1961; **4:** 561-571.

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