Commentary

Understanding How Postnatal Depression Screening and Early Intervention Works in the Real World – A Singaporean Perspective

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Abstract

Postnatal depression is a major public health problem with clearly established adverse effects in child outcomes. This study examines the 4-year outcomes of a screening and early intervention programme, in relation to improvement in symptoms, functioning and health quality of life. Women were prospectively recruited up to 6 months postdelivery, using the Edinburgh Postnatal Depression Scale (EPDS) as a screening tool. High-scorers (EPDS >13), were offered psychiatric consultation, and those with borderline scores (EPDS 10-12) were provided counselling, and offered follow-up phone counselling by the assigned case manager. Outcome measures were obtained at baseline, and at 6 months or discharge if earlier, for levels of symptoms, functioning, and health quality of life. From 2008 to 2012, 5245 women were screened, with 307 (5.9%) women with EPDS >13 receiving intervention. Of these, 70.0% had depression, 4.6% anxiety and 3.4% psychosis. In the depression subgroup, the net change was improvement of 93.4% EPDS symptom scores, 92.2% Global Assessment of Functioning (GAF) scores, and 88.3% visual analogue scale (EQ VAS) health quality of life scores. Outcome scores across diagnostic categories demonstrated median changes of 10 points on EPDS, 20 points on GAF, and 25 points on EQ VAS, reflecting 73.9%, 36.4% and 41.7% change from baseline scores. Women with psychosis showed the biggest (80.0%) relative change in GAF functioning scores from baseline to discharge but had the lowest median change in EPDS symptom scores. A screening and intervention programme rightly-sited within an obstetric setting can improve clinical outcomes because of early detection and intervention.

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Introduction

Postpartum depression is a major public health problem; left untreated, it can lead to increased morbidity in the mother, the infant and the family system.[1,2] These include negative effects on maternal-infant attachment, as depressed women have been found to have poorer responsiveness to infant cues and more negative, hostile or disengaged parenting behaviours. This then affects child development, as there is associated lower cognitive functioning and adverse emotional development in the children.[3,4] Children of chronically depressed mothers are also at a higher risk of stunted growth and behavioural problems.[5,6]

The estimated prevalence of postpartum depression in the United States (US), United Kingdom (UK) and Australia ranges from 7% to 20%. In Singapore, the prevalence of peripartum depression is about 12% for antepartum depression, and about 7% for postpartum depression.[7] Peripartum depressive symptomatology is seen in about 1 in 5 pregnant women, although not all cases amount to major depression.[8] In the US and Australia, maternal health services and well established programmes target this population, whilst Singapore developed its first postpartum depression early intervention programme only in 2008.[9] The programme is funded by the health ministry and was

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developed at the KK Women's and Children's Hospital (KKH), which handles some 12,000 deliveries annually (representing about a third of Singapore's national births). This paper looks at the 4-year outcomes of the programme, and studies the effectiveness of early intervention in relation to improvement in symptoms, functioning and health quality of life.

Materials and Methods

This prospective cohort study of postpartum women was conducted at KKH between 2008 to 2012. The study had approval from the KKH Institutional Review Board, and the clinical programme was funded by the Ministry of Health. We recruited subjects 2 to 26 weeks postdelivery from 2 obstetric outpatient clinics. The subjects were screened by trained perinatal mental health case managers with the well validated self-report Edinburgh Postnatal Depression Scale (EPDS),[10] following which the high-scorers were offered psychiatric intervention based on a case management model. We used a threshold of 13 to identify women likely to suffer from major depression, as previously validated with good psychometric properties in Singaporean women (area under the curve [AUC] 94.4%),[11] similar to that determined by the Edinburgh and Cambridge researchers in a community sample.[12] Outcome measures of symptoms (EPDS), functioning (Global Assessment of Functioning [GAF])[13] and health quality of life (EQ-5D, VAS)[14] were taken at baseline and again at 6 months or the last visit, if earlier.

Intervention Programme

Early intervention included full psychiatric assessment, supportive counselling, psychoeducation, and problem-solving focussed counselling incorporating principles of interpersonal and cognitive behavioural therapy. Components of the supportive counselling incorporate care for the mother and her partner.

Antidepressant medication for cases was recommended for those with depression of moderate severity, taking into consideration breastfeeding preferences. A case management model was used, providing integrated, individualised and continuous care from screening through to intervention.[15] Patients were encouraged to join the support group, as postpartum depression peer support is beneficial.[16] For women with more entrenched psychological difficulties, psychotherapy was provided. Women with mother-infant bonding difficulties were provided therapy, whilst those with social problems, for example, marital conflicts, were referred to the social worker or community resources.

Data Analysis

To evaluate the programme in the treatment cohort, we calculated the change scores (discharge-baseline) in EPDS, GAF and EQ-VAS and summarised the distribution of change scores using the mean and standard deviation. In the absence of a well defined control group (eg. women eligible for treatment who opted out of the programme), we prespecified treatment targets as criteria for programme effectiveness for each of the following outcomes: 1) a mean absolute reduction of 4 points in the EPDS baseline score[17] or a 4-point absolute reduction achieved for at least 50% of the treatment cohort, 2) a mean increase of 10 points in GAF or a 10-point increase in GAF for at least 50% of the treatment cohort.[18]

The rationale for the above targets is as follows: the reliable change index for the EPDS was determined to be 4 points. This is the difference between 2 scores needed for a clinician to be 95% confident that it reflects a real change in the individual's mood, and is not likely to be due to measurement error.

Improvement in GAF ratings were computed by subtracting baseline from discharge ratings. Difference in scores were considered improved if discharge ratings were 10 or more points higher than baseline scores, and not improved if otherwise. The 10-point difference criterion was used because the GAF uses 10-point ranges to define impairment severity levels, so that a 10-point change represents a change in level of impairment based on the clinician's assessment. We also examined median absolute change and percentage improvement in all outcome measures.

Results

During the study period, 5245 women were screened. The mean age was 30.38 (SD 4.80) years and they were screened at the mean of 4.91 (SD 2.65) weeks postpartum. The mean EPDS score was 4.58 (SD 4.31). A total of 307 (5.9%) women with EPDS >13 entered the intervention arm. Table 1 shows the demographic characteristics of these women.

Primary Diagnosis for Those Entering Intervention

Using DSM IV criteria, a little over half of the 307 women were diagnosed to have postpartum depression. Of these, 40.7% were diagnosed to have major depression, postpartum onset and 12.4% were diagnosed to have minor depression, postpartum onset. We observed that 16.4% suffered from major depression in pregnancy that continued to the postpartum period. About an eighth (11.8%) of the subjects were diagnosed to have adjustment disorder and 3.4% had puerperal psychosis (Table 2).

Table 1. Descriptives of Women that Entered Clinical Intervention

	n = 307	%
Maternal age (years)		
19 – 24	22	12.4
25 – 34	110	62.1
35 – 40	38	21.5
>41	7	4
Marital status		
Married	168	94.9
Separated	2	1.1
Divorced	1	0.6
Cohabitating	3	1.7
Single	3	1.7
Race		
Chinese	111	62.7
Malay	32	18.1
Indian	23	13.0
Others	11	6.2
Nationality		
Singaporeans	134	75.7
Permanent residents	31	17.5
Foreigners	12	6.8
Educational qualifications		
Primary	7	4
Vocational	13	7.3
Secondary	40	22.6
Tertiary (diploma & degree)	116	65.5
Occupation		
Home maker	72	40.7
Professional	39	22
Administrative/executive	37	20.9
Service line	19	10.7
Housing		
Public	159	89.8
Private	18	10.2
Income (monthly)		
<$3000	46	25.9
$3001 – $6000	51	28.9
>$6001	43	24.9
Unplanned pregnancy	93	52.5
Planned pregnancy	84	47.5

Table 2. Primary Diagnosis

Primary Diagnosis	Frequency	%
Depression		
Major depression		
Antepartum onset – now postpartum	49	16.0
Postpartum onset	137	44.8
Minor depression		
Antepartum onset – now postpartum	4	1.3
Postpartum onset	38	12.4
Postnatal anxiety	14	4.6
Obsessive compulsive disorder (postpartum onset)	2	0.7
Adjustment disorder		
Postpartum onset with depression	25	8.2
Postpartum onset with anxiety	8	2.6
Puerperal psychosis	10	3.3
Pre-existing illness (eg. dysthymia)	4	1.3
Others (eg. acute grief, borderline IQ, acute stress, insomnia)	13	4.2
No mental illness	2	0.7
Total	306	100

IQ: Intelligence quotient

The majority (83.4%) had only 1 primary diagnosis. Among the remaining 16.6% with a secondary diagnosis, anxiety disorder (4.2%) was the most prevalent comorbid condition. When classified according to clinical symptoms, the majority (83.2%) had depressive symptoms, 8.3% had anxiety symptoms and only 3.3% had psychotic symptoms.

The common associated problems cited were marital conflicts (41.8%), lack of social support (33.9%), conflicts with in-laws (27.7%), financial problems (15.3%) and work-related stress (9.6%).

Baseline Scores (EPDS, GAF and EQ VAS) amongst Diagnostic Groups

The diagnostic groups did not vary significantly in baseline scores of EPDS, GAF and EQ VAS (Table 3). However, the range of baseline GAF scores was widest in women with puerperal psychosis.

Clinical Outcomes of Intervention

Most of the patients in the intervention group were seen for at least 2 visits. However, 26 (10.3%) of those in the depression group were seen only once. There were some patients in the depression and anxiety subgroups that required ongoing evaluation and treatment. A minority (15.4%) of the patients in the anxiety subgroup were still receiving intervention beyond 6 months.

In the depression subgroup, the net change of EPDS symptom scores was an improvement in 93.4%. Similarly, net improvement of GAF functioning scores was 92.2%, and of EQ VAS health quality of life scores was 88.3%.

Table 3. EPDS, GAF and EQ VAS Scores at Baselines According to Diagnostic Subgroups

	Baseline Summary								
	EPDS			GAF			EQ VAS		
	Mean	SD	n	Mean	SD	n	Mean	SD	n
Depression	18.23	5.350	252	58.74	8.158	251	52.53	19.279	251
Anxiety	16.92	5.782	26	59.54	7.664	26	54.62	19.946	26
Puerperal psychosis	16.00	10.198	10	53.11	15.560	9	50.00	38.079	9
Others	15.87	6.034	15	65.40	11.463	15	49.67	22.238	15
Total	17.93	5.643	303	58.97	8.724	301	52.49	20.140	301

EPDS: Edinburgh Postnatal Depression Scale; EQ VAS: Visual analogue scale; GAF: Global Assessment of Functioning
Note: The diagnostic groups (Dep, Anx, PP, Others) did not statistically significantly differ in their baseline distributions for EPDS (KW = 3.21, df = 3, P = 0.359), GAF (KW = 7.71, df = 3, P = 0.052) and EQ VAS (KW = 1.15, df = 3, P = 0.765).

The respective net changes in the anxiety subgroup were improvements in EPDS and GAF in all patients, and an improvement of 71.4% in EQ VAS. In the psychosis subgroup, the net improvement in EPDS scores was 60.0%, with GAF 100.0% and EQ VAS 77.8%. Whilst the median (absolute) change in scores for the EPDS, GAF and EQ VAS across the different diagnostic groups were not dissimilar, the patients with psychosis showed the biggest absolute (40%) and relative (80.0%) change in the GAF functioning scores from baseline to discharge (Fig. 1).

When the diagnostic groups were compared based on the outcome EPDS scores, there was no statistical significance between groups in the proportion of women experiencing improvement, no change or worsening "depressive" symptoms assessed by EPDS scores. Outcome scores across diagnostic categories demonstrated a median change of 10 points on the EPDS, 20 points on the GAF, and 25 points on the EQ VAS, reflecting 73.9%, 36.4% and 41.7% change from baseline scores.

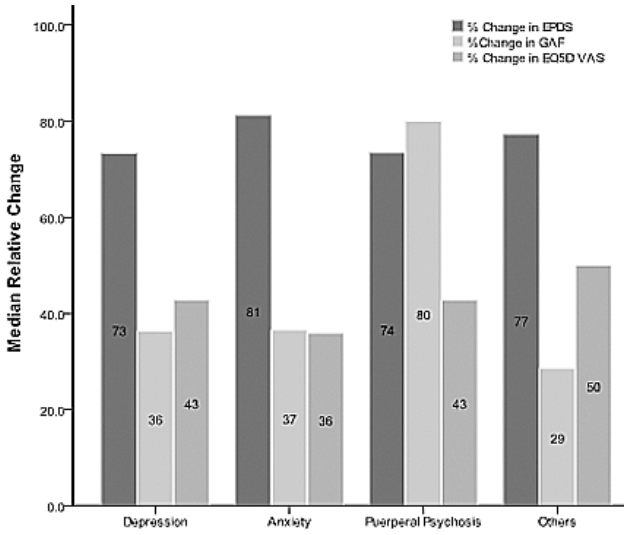

Fig. 1. Graph showing median relative improvement in outcome measures across diagnostic groups.

Discussion

Of the 5245 women, 307 (5.9%) screened positive and received clinical intervention. This is in keeping with the worldwide prevalence rate of peripartum disorders[19] and the local rate reported in published studies.[7,8]

Most studies on postpartum women focus on the primary diagnosis of major depression. However, our study showed that 16.6% have a secondary diagnosis of which anxiety is the most common comorbid disorder. Interestingly, women with anxiety as the primary disorder required a longer duration of intervention as compared to women with depression as the primary disorder. Hence, it is important to recognise comorbid postpartum anxiety and treat accordingly.

The clinical outcomes showed that intervention was beneficial as all 3 subgroups reported improvement in their overall EPDS, GAF and EQ VAS scores on discharge. The patients in the psychosis subgroup showed the biggest relative change in GAF functioning and EQ5D health quality of life scores, which emphasises the importance of treatment in this subgroup, whilst they had comparable relative change in EPDS symptom scores with the other diagnostic groups. The 13-point median change in the EPDS suggests that this programme is effective, based on Matthey et al's proposed Reliable Change Index of 4 points for the EPDS.[17] Similarly, the 20-point median change on the GAF suggests the effectiveness of the programme, as each symptom or functional level is represented by a 10-point difference.

The main limitation of this study is that it is not a

randomised study, but an observational one. The groups are thus not directly comparable and the results cannot be generalised. The measures were also not taken at fixed time-points, as the patient visits were determined based on individual needs. The research team was also not blinded as to the diagnostic types used, as the clinical team doubled up as the research team for continuity of care. The EPDS was also used as both an entry and outcome measure when a preferred methodology would include an alternative symptom rating outcome measure. The GAF has also been shown to have limitations in assessing health outcomes, due to a lack of research-based development and limited empirical testing.[20] Similarly, little is understood about the psychometric properties of the EuroQol measure, and future studies are needed in the postpartum population. We were also not able to examine aspects of effectiveness such as programme uptake, aspects of delivery (staff, competence), resource utilisation and patient outcomes.

Nonetheless, we believe this study adds valuable understanding about intervention on the whole range of postpartum mental disorders in the real world setting, and provides an audit of a postpartum depression screening programme with the widely used EPDS.

Conclusion

Postpartum psychiatric disorders are a public health concern. A screening programme rightly-sited within an obstetric setting can improve clinical outcomes because of early detection and intervention.

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