Screening for perinatal depression and predictors of underscreening: findings of the Born in Queensland study

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The known: Since 2011, Australian clinical guidelines recommend universal antenatal screening of pregnant women with the Edinburgh Postnatal Depression Scale (EPDS).

The new: In 2015, EPDS screening rates were much higher in the public than the private health care system, and were lower for women who were over 35 years of age, Indigenous Australians or born overseas, single or separated, or of higher socio-economic status.

The implications: Our study may serve as the basis for exploring the impact of recent changes to Medicare definitions that aim to increase screening of pregnant women in private health care.

Abstract

Objectives: To investigate screening with the Edinburgh Postnatal Depression Scale (EPDS) as part of Queensland prenatal care services, as well as maternal and socio-demographic factors associated with not being screened.

Design, setting: Cross-sectional retrospective analysis of data from the Queensland population-based Perinatal Data Collection for July 2015 – December 2015.

Participants: All women giving birth in Queensland during the second half of 2015.

Main outcome measures: Screening with the EPDS, with the values "yes" (health professional recorded an EPDS score), "no" (health professional reported it was not performed), and "not stated".

Results: Of 30 468 women who gave birth in Queensland, 21 735 (71.3%) completed the EPDS during pregnancy; 18 942 pregnant women were enrolled as public patients (91.0%) and 2762 as private patients (28.8%). After adjusting for other socio-demographic factors, screening was less likely for women who were aged 36 years or more (*v* 25 years or younger: adjusted odds ratio [OR], 0.69; 95% CI, 0.60–0.79), enrolled as private patients (aOR, 0.05; 95% CI, 0.05–0.06), born overseas (aOR, 0.75; 95% CI, 0.68–0.82), Indigenous Australians (aOR, 0.47; 95% CI, 0.39–0.56), single or separated (aOR, 0.83; 95% CI, 0.73–0.94), or of higher socio-economic status.

Conclusions: Four years after clinical guidelines recommending universal screening with the EPDS were published, screening rates for private and public health care patients differed markedly. Our results may inform future comparisons and analyses of the impact on screening of recent changes to Medicare definitions intended to increase that of women in private health care.

Each year, about 300 000 women give birth in Australia;[1] as many as 12% experience depression and 15% anxiety during the antenatal period.[2,3] Depression during pregnancy is strongly linked with postnatal depression, future depressive episodes,[4,5] and a range of behavioural and developmental consequences for mothers and their children.[4,6]

As antenatal care primarily focuses on the physical health of prospective mothers and their babies, mental health symptoms tend to be viewed as a natural part of pregnancy.[7] Moreover, antenatal depression is often unrecognised because many women with symptoms during pregnancy do not seek help.[8] In this context, mental health screening as part of routine antenatal care can effectively identify women with mental health problems during pregnancy and reduce the stigma associated with seeking help.[8,9] Primary health care screening programs during the perinatal period reduce the prevalence of depression and increase rates of remission and response to treatment.[10] Women are also more likely to undergo further assessment if they complete screening during pregnancy rather than post partum.[11] Increased identification, follow-up, and response to treatment may reduce the detrimental health effects of untreated depression for women and their babies.

The 2011 Beyondblue clinical practice guidelines for depression and related disorders during the perinatal period[12] recommend universal, routine antenatal screening for depressive symptoms with the Edinburgh Postnatal Depression Scale (EPDS),[13] a widely used, validated screening tool for perinatal depression.[8,12] In 2012, the Royal Australian and New Zealand College of Obstetricians and Gynaecologists (RANZCOG) endorsed the Beyondblue guidelines and recommended universal ante- and postnatal mental health screening.[14] Prior to publication of the 2011 clinical practice guidelines, evidence about the level of mental health screening in Australian primary care was mixed. One study found that 37% of women had completed formal depression questionnaires during pregnancy.[15] Two population-based surveys found that 66%[16] or 45%[17] had been asked about their mental health by a health care professional during an antenatal care visit; pregnant women enrolled as public patients were more likely to report being asked about their mental health than private patients.[16,17]

Access to administrative data after publication of the 2011 clinical practice guidelines provided us with a unique opportunity for assessing changes in mental health screening in Queensland and identifying groups of women less likely to be screened. In this study, we investigated screening with the EPDS as part of Queensland Health perinatal care services, as well as the maternal and socio-demographic factors associated with not being screened, including differences between private and public hospital patients.

Methods

This study is part of the Born in Queensland study, a birth cohort study based on linked health administrative records from three state health registers, the Perinatal Data Collection (PDC), the Hospital Admitted Patient Data Collection, and the Mental Health

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• doi:10.5694/mja2.12030 • See Editorial, p. 19 • Published online 9/11/18

1 Edinburgh Postnatal Depression Scale screening of 30 468 women in Queensland, July–December 2015*

	Screened	Not screened	*P*
Total number of women	21 735 (71.3%)	7543 (24.8%)	
Patient type			< 0.001
Public	18 942 (91.0%)	1578 (7.6%)	
Private	2762 (28.8%)	5935 (61.8%)	
Age (years)			< 0.001
25 or less	5948 (87.2%)	773 (11.3%)	
26–35	12 862 (68.9%)	4982 (26.7%)	
36 or more	2925 (58.9%)	1788 (36.0%)	
Indigenous status			< 0.001
Not Indigenous	20 090 (70.4%)	7264 (25.5%)	
Indigenous	1645 (85.1%)	279 (14.4%)	
Marital status			< 0.001
Married/de facto	17 335 (68.4%)	6864 (27.1%)	
Not married/separated	4377 (85.8%)	664 (13.0%)	
Birth country			0.76
Australia	15 952 (71.3%)	5567 (24.9%)	
Other	5783 (71.6%)	1976 (24.5%)	
Parity			< 0.001
0	8722 (69.9%)	3194 (25.6%)	
1	7327 (69.1%)	2840 (26.8%)	
2	3266 (74.9%)	952 (21.8%)	
3	1363 (79.9%)	298 (17.5%)	
4 or more	1057 (79.7%)	259 (19.5%)	
Current medical condition			< 0.001
One or more medical conditions	6405 (74.6%)	1899 (22.1%)	
No current medical condition	15 330 (70.1%)	5644 (25.8%)	
Domestic violence screening			< 0.001
Yes	18 685 (86.6%)	2879 (13.4%)	
No	2899 (39.7%)	4183 (57.3%)	
Remote areas			< 0.001
Major cities	12 495 (65.6%)	5418 (28.4%)	
Inner regional	4850 (80.0%)	1184 (19.5%)	
Outer regional	3620 (82.7%)	744 (17.0%)	
Remote/very remote	541 (84.0%)	102 (15.8%)	
Assisted conception			< 0.001
No assisted conception	21 037 (73.0%)	6723 (23.3%)	
Assisted conception	698 (42.2%)	820 (49.5%)	
Socio-economic status (IRSD), deciles			< 0.001
9–10 (least disadvantaged)	2954 (53.0%)	2353 (42.2%)	
7–8	4783 (67.7%)	1863 (26.4%)	
5–6	4515 (73.9%)	1315 (21.5%)	
3–4	4453 (79.1%)	1019 (18.1%)	
1–2 (most disadvantaged)	5009 (82.9%)	978 (16.2%)	

IRSD = Index of Relative Socioeconomic Disadvantage. * Edinburgh Postnatal Depression Scale information was not available for 1190 women (290 public patients, 900 private patients). ◆

Outpatient Data Collection.[18] For this investigation, we analysed information from the PDC, the state population-based data collection that has collected information since 2009 for all live and stillbirths of babies with birthweights of at least 400 grams or gestation periods of at least 20 weeks, including pregnancy and delivery characteristics and complications and demographic data. Information about screening with the EPDS was collected only from the 30 468 women who gave birth during the second half of 2015.

Outcome measures

The outcome variable was screening with the EPDS, with the values "yes" (the health professional recorded an EPDS score), "no" (the health professional reported it was not performed), and "not stated". Explanatory variables included public or private patient status; maternal age (≤ 25 years, 26–35 years, ≥ 36 years); Indigenous status (self-identified); marital status (married, de jure or de facto; separated or not married); country of birth (born in Australia, not born in Australia); parity; current medical conditions that were present prior to or developed during the pregnancy and were not directly attributable to the pregnancy, but could affect its outcome (none, one or more); pregnancy complications that arose during the pregnancy, were directly attributable to the pregnancy, and could affect its outcome (none, one or more); domestic violence screening; geographic classification of residence (major cities, inner regional, outer regional, remote, very remote);[19] plurality (singleton, twins, triplets, more); assisted conception; and socio-economic status for place of residence, based on the Index of Relative Socioeconomic Disadvantage (IRSD) of the Socio-Economic Index for Areas (decile 1, most disadvantaged; decile 10, least disadvantaged).[20]

Statistical analysis

We assessed the uptake of screening by women according to their socio-demographic characteristics in descriptive analyses, including cross-tabulation and χ^2 tests. Characteristics that potentially influenced screening uptake were then assessed in univariate and multivariate logistic regression analyses. Multivariate regression models were adjusted for maternal age, Indigenous status, marital status, birth country, parity, the presence of any current medical condition, screening for domestic violence, remoteness, assisted conception, and socio-economic status. As earlier research found a notable difference in screening rates between public and private patients, we examined this feature in interaction tests. As the screening rates for private and public patients differed markedly, we present separate logistic regressions for the private and public sectors.

Ethics approval

The Born in Queensland project was approved by the office of the Director-General of Queensland Health (reference, QCOS/029817/RD006796). Ethics approval was also granted by the Children's Health Queensland Human Research Ethics Committee (reference, HREC/16/QRCH/231) and ratified by the University of Queensland Ethics Committee (clearance number, 2016001629).

2 Unadjusted and adjusted logistic regression analyses of the influence of socio-demographic factors on Edinburgh Postnatal Depression Scale (EPDS) screening of pregnant women in Queensland, July–December 2015

Variables	Odds ratio for being screened (95% CI)	
	Unadjusted*	Adjusted†
Number of women	—	28 251
Patient type		
Public (20 520 patients)	1	1
Private (8697 patients)	0.04 (0.04–0.04)	0.05 (0.05–0.06)
Age (years)		
25 or less	1	1
26–35	0.34 (0.31–0.36)	0.88 (0.78–0.98)
36 or more	0.21 (0.19–0.23)	0.69 (0.60–0.79)
Indigenous status		
Not Indigenous	1	1
Indigenous	2.13 (1.87–2.43)	0.47 (0.39–0.56)
Marital status		
Married/de facto	1	1
Not married/separated	2.61 (2.39–2.85)	0.83 (0.73–0.94)
Birth country		
Australia	1	1
Other	1.02 (0.96–1.08)	0.75 (0.68–0.82)
Parity		
0	1	1
1	0.94 (0.89–1.00)	0.93 (0.85–1.01)
2	1.26 (1.16–1.36)	0.94 (0.84–1.06)
3	1.67 (1.47–1.91)	0.84 (0.70–1.01)
4 or more	1.49 (1.30–1.72)	0.52 (0.43–0.63)
Current medical condition		
One or more medical conditions	1	1
No current medical condition	1.24 (1.17–1.32)	1.42 (1.31–1.55)
Domestic violence screening		
Yes	1	1
No	9.36 (8.81–9.96)	4.96 (4.56–5.38)
Geographic classification		
Major cities	1	1
Inner regional	1.78*(1.65–1.91)	2.46 (2.20–2.74)
Outer regional	2.11 (1.94–2.30)	2.64 (2.33–2.99)
Remote/very remote	2.30 (1.86–2.85)	2.12 (1.60–2.80)
Assisted conception		
No assisted conception	1	1
Assisted conception	0.27 (0.25–0.30)	0.66 (0.57–0.77)
Socio-economic status (IRSD)		
9–10 (least disadvantaged)	1	1
7–8	2.05 (1.90–2.21)	1.59 (1.42–1.77)
5–6	2.73 (2.52–2.97)	2.53 (2.24–2,86)
3–4	3.48 (3.19–3.80)	1.91 (1.67–2.18)
1–2 (most disadvantaged)	4.08 (3.74–4.45)	1.51 (1.33–1.72)

CI = confidence interval; IRSD = Index of Relative Socioeconomic Disadvantage. * Sample sizes for the unadjusted analyses differ slightly because of missing values for some variables. † Adjusted for all other factors in the table. Although information on EPDS screening was available for 29 278 women, the sample size for the adjusted analysis was 28 251 because of missing values for some variables. ◆

Results

The mean age of the 30 468 women who gave birth in Queensland during the second half of 2015 was 29.9 years (standard deviation, 5.6 years); 20 810 (68.4%) were public patients, and 22 390 (73.5%) were born in Australia. Most women identified themselves as non-Indigenous (28 533, 93.7%), reported they were married or in a de facto relationship (25 328, 83.2%), and had conceived naturally (28 812, 94.6%). Of the 1934 (6.4%) who identified as Indigenous Australians, 1835 (94.9%) were enrolled as public patients.

Of the 30 468 women who gave birth during the second half of 2015, 21 735 (71.3%) completed the EPDS during their pregnancy. Significantly fewer private than public patients were screened (28.8% *v* 91.0%; $P < 0.001$). EPDS information was not available for 1190 women (4%), of whom 290 were public and 900 were private patients; that is, this information was not available for 1.4% of public patients and nearly 10% of private patients (Box 1).

In the adjusted multivariate model, women aged 36 or more, enrolled as private patients, living in major cities, or from areas with higher socio-economic status were less likely to have been screened; Indigenous women, women born outside Australia, and single or separated women were also less likely to be screened (Box 2).

In the separate logistic regression analyses of screening rates for public and private patients, Indigenous women, unmarried women, and women born outside Australia in the public health system were less likely to undergo mental health screening. In the private health system, women who were married or living in major cities were less likely to receive screening (Box 3).

Discussion

This is the first Australian study to estimate the prevalence of EPDS-based screening for antenatal depression of women in the private and public health care systems since the publication of the 2011 clinical practice guidelines.[12] We found that 71% of pregnant women in Queensland were screened with the EPDS during the antenatal period. Private patients, women born outside Australia, and women who identified as Indigenous were less likely to be screened. In contrast, 91% of pregnant women in the public health care system were screened. The greater uptake of screening in the public system may reflect greater awareness of mental health problems; for instance, it has been suggested that public hospitals make particular efforts to recognise and

3 Adjusted logistic regression analyses of the influence of socio-demographic factors on Edinburgh Postnatal Depression Scale screening of pregnant women in Queensland, July–December 2015

Variable	Adjusted odds ratio* (95% CI)		*P* (interaction)
	Public sector	Private sector	
	20 173	8078	
Age (years)			
25 or less	1	1	
26–35	1.12 (0.97–1.30)	0.48 (0.40–0.59)	< 0.001
36 or more	1.00 (0.81–1.22)	0.35 (0.28–0.44)	< 0.001
Indigenous status			
Not Indigenous	1	1	
Indigenous	0.66 (0.54–0.81)	1.26 (0.76–2.08)	< 0.001
Marital status			
Married/de facto	1	1	
Not married/ separated	0.68 (0.59–0.78)	2.10 (1.64–2.70)	< 0.001
Birth country			
Australia	1	1	
Other	0.60 (0.52–0.68)	0.88 (0.77–1.00)	0.93
Parity			
0	1	1	
1	0.76 (0.66–0.88)	1.04 (0.92–1.16)	0.37
2	0.73 (0.61–0.87)	1.22 (1.03–1.44)	0.001
3	0.55 (0.44–0.69)	1.65 (1.23–2.22)	< 0.001
4 or more	0.37 (0.29–0.46)	1.75 (1.10–2.79)	< 0.001
Current medical condition			
One or more medical conditions	1	1	
No current medical condition	1.02 (0.90–1.16)	1.69 (1.50–1.89)	<0.001
Domestic violence screening			
Yes	1	1	
No	11.29 (10.00–12.74)	2.95 (2.63–3.30)	< 0.001
Remote areas			
Major cities	1	1	
Inner regional	2.12 (1.77–2.54)	2.27 (1.97–2.60)	< 0.001
Outer regional	0.81 (0.69–0.95)	4.63 (3.94–5.45)	< 0.001
Remote/very remote	1.45 (1.02–2.07)	2.52 (1.67–3.81)	< 0.001
Assisted conception			
No assisted conception	1	1	
Assisted conception	1.11 (0.73–1.68)	0.62 (0.52–0.75)	< 0.001
Socio-economic status (IRSD)			
9–10 (least disadvantaged)	1	1	
7–8	1.06 (0.86–1.30)	1.68 (1.44–1.95)	< 0.001
5–6	1.16 (0.93–1.44)	3.26 (2.78–3.81)	< 0.001
3–4	1.09 (0.88–1.36)	2.30 (1.91–2.76)	< 0.001
1–2 (most disadvantaged)	0.89 (0.73–1.09)	2.26 (1.85–2.77)	< 0.001

CI = confidence interval. *Adjusted for all other factors in table.

respond to the needs of more vulnerable populations. Before the 2011 guidelines were published, the proportion of women in Australia receiving mental health assessments during pregnancy had relied on women reporting whether they had been asked about their mental health during antenatal care. In our study, mental health screening was based on a health professional using a validated screening tool and recording a score.[16,17]

Earlier studies also found that most pregnant women who received some form of mental health assessment had been seen in public hospitals.[16,17] As one-quarter of pregnant women in Australia receive antenatal care in private hospitals,[1] the 29% screening rate for private patients is worrying, because it means they may not receive optimal mental health care. It has been reported that 10% of pregnant women in private hospitals require referral after screening for symptoms of depression.[21] Further, the prevalence of depressive symptoms among private patients was similar to that for both the overall population and for public patients.[4,21,22]

The low uptake of mental health screening by private patients may be linked with the fact that private obstetric care is provided by one obstetrician throughout the pregnancy rather than by midwives or general practitioners. Obstetricians in private hospitals may therefore perceive that their relationship with the patient is sufficiently close that a screening tool is not needed to identify psychological difficulties. Our data did not encompass alternative psychological assessments that obstetricians might undertake. Other reasons for the lower uptake may include obstetricians being unfamiliar with the screening test, or having insufficient time to administer the EPDS.[23] Further, some women may not feel comfortable discussing their mental health with obstetricians.[8] However, recent studies have found that most pregnant women are receptive to being asked; they view screening as a positive experience and indeed prefer routine

screening, as it does not have the stigma associated with targeted assessment.[24]

To encourage more screening of private patients, two Medicare items were amended in late 2017 (items 16590 and 16591); the Medicare list fee was increased, and the definition noted that a mental health assessment should be offered to every woman during their pregnancy.[25] Further, mental health assessment has been added as a core competency for RANZCOG trainees.[26]

Information about EPDS screening was more frequently missing for private than for public patients, suggesting that estimates of its use in private practice may be less reliable than for the public health system. Screening of private patients may also be underreported if someone other than the health professional who administered the test is responsible for reporting it, or if the reporting person does not have access to antenatal notes from the general practitioner or obstetrician.

Our results indicate that Indigenous Australians are less likely to be screened than non-Indigenous women, even after adjusting for socio-economic disadvantage and remoteness. Indigenous mothers may be less likely to attend antenatal checks.[1] This is a problem, as Indigenous women and their babies have greater risks of adverse perinatal outcomes, including higher rates of maternal mortality, low birthweight, and pre-term birth than non-Indigenous women, and these outcomes are correlated with depressive symptoms.[1]

After adjustment for other factors, women born overseas were less likely to be screened than those born in Australia, consistent with findings based on clinical samples or retrospective surveys in which women were asked whether they had been queried about their mental health.[16,17] This may be partially explained by a lack (or perceived lack) of English fluency among foreign-born mothers, but the EPDS is available and validated in several languages;[26] further training in its use with women from non-English-speaking backgrounds may be required. Our finding that private patients without current partners were more likely to complete the EPDS than those with partners deserves further exploration; while not having a partner is a key risk factor for depression during pregnancy,[22] so is having an unsupportive partner.[8]

One of the strengths of our study was that the EPDS is a validated, widely used instrument, recommended by Australian practice guidelines.[12,26] Previous studies examining the uptake of mental health assessment during pregnancy have not assessed the use of validated instruments.[16,17] Another strength was that we analysed data for all of Queensland, and our study was not subject to recall bias, unlike earlier studies.[16,17] Additionally, we assessed screening uptake 4 years after EPDS screening was included in Australian clinical guidelines, thereby allowing us to assess how widely they have been adopted.

Limitations

Analysing administrative health data may not capture important covariates, such as mental health problems prior to an antenatal check that required specialist assessment rather than routine screening. Further, data for EPDS screening were available only for a 6-month period; it was not possible to assess changes in screening rates over time. Finally, our study focused on one instrument for assessing mental health problems, and did not include alternative instruments that may been used in private practice.

Conclusion

The results of our study may inform future research that compares and analyses the impact of recent changes to Medicare definitions on screening uptake. Our most significant finding is that the antenatal screening rate for depressive symptoms was markedly lower for private than for public patients in Queensland 4 years after the publication of clinical practice guidelines recommending universal EPSD screening of pregnant women.

Competing interests: No relevant disclosures.

Received 21 June 2018, accepted 23 August 2018. ■

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