Combined use of the postpartum depression screening scale (PDSS) and Edinburgh postnatal depression scale (EPDS) to identify antenatal depression among Chinese pregnant women with obstetric complications

Ying Zhao [a,b], Irene Kane [c], Jing Wang [d,*], Beibei Shen [d], Jianfeng Luo [e], Shenxun Shi [b,f,*]

[a] School of Nursing, Fudan University, No. 305 Fenglin Road, Shanghai 200032, PR China
[b] Psychiatry Department, Fudan University Affiliated Huashan Hospital, No. 12 Wulumuqi Zhong Road, Shanghai 200040, PR China
[c] School of Nursing, University of Pittsburgh, 3500 Victoria St. VB 420, Pittsburgh, PA 15261, United States
[d] Fudan University Affiliated Women's Hospital, No. 128 Shenyang Road, Shanghai 200090, PR China
[e] Department of Biostatistics, School of Public Health, Fudan University, No. 130 Dongan Road, Shanghai 200032, PR China
[f] Shanghai Jiao Tong University School of Medicine Affiliated Shanghai Mental Health Centre, No. 600 Wan Ping Nan Road, Shanghai 200030, PR China

ARTICLE INFO

ABSTRACT

The purpose of the present study was to evaluate antenatal depression screening employing two scales: the Postpartum Depression Screening Scale (PDSS) and Edinburgh Postnatal Depression Scale (EPDS) for the population of Chinese pregnant women with obstetric complications. A convenience sample of 842 Chinese pregnant women with complications participated in this study. The PDSS total score correlated strongly with the EPDS total score ($r = 0.652$, $p = 0.000$). Each tool performed extremely well for detecting major and major/minor depressions with PDSS resulting in a better psychometric performance than EPDS ($p < 0.01$). If combined use, the recommended EPDS cut-off score was 8/9 for major depression, at which the sensitivity (71.6%) and specificity (87.6%) were the best, and the recommended PDSS cut-off score was 79/80 for major depression, along with its best sensitivity (86.4%) and specificity (100%). The study concluded that EPDS and PDSS appear to be reliable assessments for major and minor depression among the Chinese pregnant women with obstetric complications. Combined use of these tools should consider lower cutoff scores to reduce the misdiagnosis and improve the screening validity.

© 2015 Elsevier Ireland Ltd. All rights reserved.

1. Introduction

Obstetric complications are common and highly distressing events (Ariadna et al., 2009). Women with obstetric complications reported significantly more negative experiences during their recent childbirth (Thornton et al., 2010; Blom et al., 2010; Gausia et al., 2012). Early recognition of depression in pregnant women can eliminate the length of time that these women have to suffer with debilitating perinatal depression and can decrease the potentially harmful effects on the infants involved (Neiman et al., 2010).

Only a minority of pregnant women suffering from depression are identified by health care providers despite its importance. A major impediment to depression detection is the difficulty in the administration of depression screening tests in busy clinical settings. If there were simplified and appropriate screening instruments, the obstetricians and obstetrical nurses would be able to identify women with obstetric complications who have depressive symptoms more efficiently and effectively (Choi et al., 2012).

In both research and clinical practice, a positive screen for depression in the obstetrical patient should be followed by a confirmed clinical diagnosis through a structured diagnostic survey or semi-structured interview based on DSM disorders (SCID) criteria for major depression (Daniels, 2013; Tandon et al., 2012). However, Gjerdingen et al. (2011) found the SCID might be less convenient or comfortable for mothers because some individuals cannot be reached for an interview, resulting in missed opportunities for diagnosis, selection bias, and possible treatment disparities. In contrast, using a depression survey during a convenient perinatal visit to the obstetrician's office, though perhaps less accurate, could be easily administered, is more cost-effective, and more inclusive of screening all women.

Fortunately, there are many different, easily administered depression screening tools to help identify those who are at greatest risk, according to SCID criteria, are widely accepted and have been developed to screen for postnatal and antenatal

* Corresponding authors. Tel.: +86 13816203171.
 E-mail addresses: wangjing1172@sina.com (J. Wang),
shishenxun@163.com (S. Shi).

depression in the primary care setting (Boyd et al., 2005; Breedlove and Fryzelka, 2011), two widely utilized screening scales are the Edinburgh Postnatal Depression Scale (EPDS) (Cox et al., 1987) and the Postpartum Depression Screening Scale (PDSS) (Beck and Gable, 2000).

Some studies have compared the psychometric properties of the EPDS and other screening scales. For example, Tandon et al., (2012) enrolled 32 pregnant women and 63 women with a child < 6 months in home visitation programs. Each woman completed a structured clinical interview and three depression screening tools: the EPDS, Center for Epidemiologic Studies Depression Scale (CES-D), and Beck Depression Inventory II (BDI-II). The results indicated that each screening tool appear to be reliable and brief assessments of major and minor depression among low-income African American perinatal women. However, given that no women during pregnancy met criteria for minor depression, it was not possible to determine optimal prenatal cutoff scores. In addition, Zhong et al. (2014) recruited 1517 women receiving prenatal care to evaluate the psychometric properties of the Patient Health Questionnaire (PHQ-9) and EPDS, and found both of them are reliable and valid scales for antepartum depression assessment. But the study results could not determine the extent to which scores from each scales are predictive of adverse maternal and perinatal outcomes.

There are few studies evaluating the comparability of the EPDS and PDSS, to date, in China, only one study (Li et al., 2011) screened 387 normal pregnant mothers within 12 weeks post-partum and compared the performance of the Chinese version of the EPDS and PDSS. Given the high prevalence of depressive symptoms among high-risk pregnant women and the lack of studies combined the EPDS and the PDSS during pregnancy, we conducted the present study to expand the body of research for perinatal depression screening by employing and analyzing the validity of the combined use of them, for antenatal depression screen in a population of Chinese pregnant women with obstetric complications. More specifically, if combined use, we wanted to determine the cutoff scores of the PDSS and the EPDS to screen for antenatal depression among this population. Previous research indicates that screening pregnant women for depression is clinically indicated; and, combining the EPDS and the PDSS might build upon the strengths of each scale to increase the validity of antenatal depression screening. Such information could encourage other researchers and clinicians to test the validity of the combined use of the different screening instruments to identify depression during the perinatal period in multiple obstetric settings.

2. Methods

2.1. Sample

The convenience sample included 842 high-risk pregnant women in various gestational weeks during November 2013 to January 2014 at the antenatal department of the Fudan University affiliated Women's Hospital.

2.2. Data collection

Convenience sampling included all of the women with obstetric complications who attended antenatal clinics within the data collection period noted above. The researcher approached the eligible women and invited them to participate in the study. All of the women who were approached were given a full explanation of the study and informed of their right to refuse to participate. All study participants who agreed to participate signed a study consent form prior to completing two depression screening scales (EPDS and PDSS) and while waiting for their routine antenatal check-up at the Fudan University affiliated Women's Hospital.

The socio-demographic and obstetrical risk factors questionnaire included questions on age, parity, gestational weeks, highest level of education completed, occupation, past and/or current health problems, and past history of adverse

obstetrical outcomes such as abortion or abnormal delivery were extracted from the interviews and the hospital medical records.

2.3. Follow-up procedures

During screening, whenever a mother's depression score was in the moderate to severe symptom range (i.e., EPDS ≥ 13 or PDSS ≥ 80), the researcher suggested the mother receive the further mental health evaluation such as SCID or MINI and subsequently encouraged the mother to contact other mental health clinicians. In addition, the researcher contacted all mothers whose scales scores placed them at a high risk for antenatal depression (i.e. EPDS score is 9–12 or PDSS score is 60–79) by: 1) a brief telephone, 2) reminded to adjust the mood during pregnancy; and, 3) follow up the antenatal depression screening actively at the next obstetric examination or with a mental health clinician referral.

2.4. Instruments

2.4.1. The Edinburgh Postnatal Depression Scale (EPDS)

The EPDS, developed by Cox et al. (1987), is the most widely used measure of PPD symptoms and is commonly used as a screening tool for prenatal depression symptoms, as well (Gaynes et al., 2005). The EPDS does not directly correspond to DSM criteria. It excludes somatic depressive symptoms (appetite change and fatigue), as well as psychomotor agitation/retardation and diminished concentration (Cox et al., 1987).

Participants base their answers on their experiences and feelings over the previous week. Each item is scored on a 4-point Likert scale from 0 to 3 with possible total scores ranging from 0–30. A higher score indicates higher reported frequency or severity of symptoms (Cox et al., 1987). Previous clinical research suggests that a cut-off for probable depression has been suggested at 12/13, and for possible depression at 9/10. However the cut-off points of 9/10 are used as markers of possible minor depression (Gibson et al., 2009) and scores > 12 are associated with a diagnosis of major depressive disorder (Cox et al., 1987).

The Chinese vision of EPDS has good validity. The area under the curve was 0.91, suggesting excellent psychometric properties in screening for depressive illness (major and minor depression) at 6-week post-partum. At the conventional 12/13 cut-off, the sensitivity of the scale was only 0.41, with specificity of 0.95 (Lee et al.,1998). If being used to screen the antenatal depression in women of the third trimester of pregnancy, the optimal critical value was 9.5, and the sensitivity and specificity was 0.786 and 0.834, respectively (Guo et al., 2009).

In the population, scores ≥ 9 suggest risk for major or minor depression. A cut-off score of 13 or more indicates a positive screen for major depression. Cronbach's alpha coefficient of the EPDS in this study was 0.78.

2.4.2. The Postpartum Depression Screen Scale (PDSS)

The PDSS is a 35-item self-report instrument that can be completed by the respondent in 5–10 min. All 35 items were derived from Beck's series of qualitative studies on this mood disorder. Although developed for postpartum depression, PDSS is accurate to screen for antenatal depression (Beck and Gable, 2002; Pereira et al., 2010). The total score indicates whether the woman needs to be referred for additional diagnostic evaluation (Pereira et al., 2011).

The items represent dimensions include sleeping/eating disturbances, anxiety/insecurity, emotional lability, mental confusion, loss of self, guilt/shame, and suicidal thoughts. For each item, the woman is asked to rate the feelings that she has experienced the last 2 weeks in a Likert scale from 1 (strongly disagree) to 5 (strongly agree). The total possible scores for the instrument range from 35 to 175 points (Beck and Gable, 2000). Higher scores on the PDSS indicate higher levels of PPD symptomatology. The total score indicates whether the woman needs to be referred for additional diagnostic evaluation (Beck and Gable, 2001). Scores ≥ 60 suggest risk for major or minor depression. A cut-off score of 80 or more indicates a positive screen for major postpartum depression (Sit and Wisner, 2009; Beck and Tatano, 2008).

Li et al., (2011) translated the PDSS from English into Chinese, reporting a Cronbach alpha of 0.96 and intraclass correlation coefficient of 0.79. Compared with other screening scales, PDSS is reported to have satisfactory reliability and validity (Zhang and Li, 2007; Yawn et al., 2009). In the present study, scores ≥ 60 suggest risk for major or minor depression. A cut-off score of 80 or more indicates a positive screen for major postpartum depression, and, the Cronbach's alpha was 0.95, indicating that the test has good instrument internal reliability.

2.4.3. Diagnosis interview

The Mini-International Neuropsychiatric Interview (M.I.N.I) is a short structured diagnostic interview, developed jointly by psychiatrists and clinicians in the United States and Europe, for DSM-IV and ICD-10 psychiatric disorders (Sheehan et al. 1998). The participants whose EPDS ≥ 9 or PDSS ≥ 60 were interviewed using the Chinese version of MINI following informed consent at a scheduled appointment. The MINI was administered by the trained research assistant.