Screening for antepartum depression through community health outreach in Swaziland

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Abstract

Maternal depression, including antepartum and postpartum depression, is a neglected public health issue with potentially far-reaching effects on maternal and child health. We aimed to measure the burden of antepartum depression and identify risk factors among women in a peri-urban community in Swaziland. We conducted a cross-sectional study within the context of a community outreach peer support project involving "Mentor Mothers". We used of the Edinburgh Postnatal Depression Scale (EPDS) to screen women for depression during the third trimester of pregnancy, using a cut-off score of 13 to indicate depression. We also collected demographic and socioeconomic factors, and assessed the association of these factors with EPDS score using logistic regression models. A total of 1038 pregnant women were screened over a period of nine months. Almost a quarter (22.7%) had EPDS scores 13 and 41.2 % were HIV positive. A fifth, 17.5% were teenagers and 73.7% were unemployed. Depression was not associated with HIV status, age or employment status. However, women with multiple socioeconomic stressors were found to be more likely to score highly on the EPDS. Depression was common among pregnant women in the peri-urban areas of Swaziland. Screening for depression using the EPDS is feasible and can be included in the community health worker standard tool box as a way to improve early detection of depression and to highlight the importance of maternal mental health as a core public health concern.

INTRODUCTION

Maternal common mental disorders, including depression, are common in low and middle-income countries (LMIC), where an estimated 15.9% of women suffer in pregnancy and

around 19.8% in the postpartum period, and both estimates are higher than those for high-income countries (1). High rates of maternal depression have been reported in Southern Africa (a region comprising South Africa, Swaziland, Botswana, Lesotho and Namibia), with estimates ranging from 39% to 47% for antenatal depression and 16% to 48% for postnatal depression (2–4). Predictors of maternal depression in this region include: lack of support, intimate partner violence, lack of linkage to HIV care, low socioeconomic status and younger age (3–7).

Depression during pregnancy is known to impact infant health (8): maternal depression is associated with low infant birth weight (9), shorter duration of breastfeeding (10), diarrhoeal diseases and stunting (11), poor neurodevelopment (12), as well as reduced quality of interaction between mothers and infants (13). Maternal depression, including antenatal and postnatal depression, is also associated with significant impairment and disability, and suicide (14, 15)

Swaziland is a small lower middle-income country bordering Mozambique and South Africa (16). At 31%, the country has one of the highest rates of HIV among adults (18–49 years) globally. Women in Swaziland are disproportionately affected with 38% of those aged 15–49 living with HIV (17). Maternal mortality is 310 per 100,000 live births, and is higher than rates in other Southern African countries including South Africa (140), Namibia (130) and Botswana (170) (18). The neonatal mortality rate is also high at 29.8 (17.2–52.9) per 1000 live births. Mental health resources in Swaziland are limited. There are 0.17 psychiatrists per 100,000 of the population, and the majority of mental health care is provided in a single mental hospital (19). Women in Swaziland face significant gender inequalities including polygamy, domestic violence, and sexual abuse, which are likely to put them at increased risk of mental illness (20, 21). Evidence-based interventions for maternal depression in Southern Africa are lacking, though a trial of a peer led community-based programme in South Africa has shown promising results (22). This study aims to estimate the prevalence of maternal depressed mood in the context of a delivery of a community-based intervention and to identify potential risk factors among a peri-urban population of women in Swaziland.

METHODS

Setting and study period

The context for the study is Matsapha, a peri-urban industrial area outside Swaziland's largest city, Manzini. Matsapha has an estimated population of 35,000, most of whom are internal migrants working in the textile and plastics factories and living in rented accommodation (23). The local language is SiSwati.

We sourced participants for the study through a community-based peer support program for maternal and child health. The program, known as Siphilile ("*We are healthy*" in SiSwati) was initiated in 2012 and works through "Mentor Mothers". Mentor Mothers are recruited from the community and receive a four-week basic training in maternal and child health. Their role involves identifying and enrolling pregnant women and vulnerable children in their community, and conducting multiple home visits throughout pregnancy until the child is six years of age. Women receive at least four visits should be performed during pregnancy

and after delivery once a week during neonatal period and then with subsiding frequency. The model, developed by the Philani Maternal and Child Health and Nutrition project in Cape Town, South Africa, incorporates a supervision structure as well as a high level of accountability, that has been shown to be effective across a range of outcome variables, including exclusive breastfeeding rates and antiretroviral treatment adherence (24, 25). During the study period, June 2014 to March 2015, a total of 32 Siphilile Mentor Mothers were active in Matsapha, covering the entire area, enrolling and following up pregnant women. A total of 1573 pregnant or recently delivered women had been enrolled by the end of the study period.

Procedure

Mentor Mothers conducted an interview with enrolled pregnant women as part of their work assignment. Women were asked about their household conditions, socioeconomic status, educational level, marital status, employment and food security as part of routine data collection by Mentor Mothers.

Measures

Mentor Mothers screened women for depression during the third trimester of pregnancy. We used the Edinburgh Postnatal Depression Scale (EPDS) to screen for antepartum depression. The EPDS has been widely used and validated in diverse settings, including Southern Africa (26–28). The scale includes ten questions about symptoms of depression and the total score ranges from 0 to 30. Several cut off scores have been used to indicate depression, but a cut-off of 15 or higher has been suggested for antepartum depression depression (29). Previous studies in South Africa used a score of 13 or above, a cut-off with a sensitivity of 0.69 and specificity of 0.78 for the detection of antenatal depression(30, 31). For comparison reasons this lower cut-off of 13 or higher was chosen. We made minor changes to the Xhosa version to modify the form into SiSwati. Since the two languages are similar and native speakers easily understand each other there was no need for a translation process. Mentor Mothers, who had received training by health professionals on how to fill in the EPDS, read out the form to participants.

Data analysis

A social vulnerability index was created through principal component analysis(32) of available socioeconomic indicators, including living conditions, water and sanitation, food security, mother's employment, mother's education and family structure (Table 1). The social vulnerability index was divided into quintiles and the quintile with the highest score as made to represent the worst off group in terms on social vulnerability.

Group percentages were calculated and Chi2-test applied to detect group differences. Univariate logistic regression was used to investigate associations between EPDS scores and socioeconomic variables. Variables showing an association of p<0.2 with a high depression score were included in a multivariate logistic regression. A p-value <0.05 was considered statistically significant.

Ethical considerations

All Mentor Mothers were provided with basic counselling skills and a psychosocial counsellor reviewed women who scored   17 on the EPDS, since this has been validated as a sign of severe depression (33). All data used for this study was sourced with permission from Siphilile management. No separate research activities took place to collect data for this study, only retrospective analysis of routine data collected as part of Siphilile intervention was used. All participants signed a written informed consent to participate in Siphilile intervention. Permission from clients less than 16 years was obtained from parents or guardians if available. All data was handled according to international standards protecting confidentiality and security, and data was made anonymous before handed over to researchers for analysis. Formal ethical approval was not needed according to laws and regulations governing ethical approval at Uppsala University (SFS 2003:460) or according to regulations put forward by Ministry of Health, Swaziland (Scientics and Ethics Guidelines for Awarding Research, MoH 2006).

RESULTS

A total of 1038 out of 1573 pregnant women enrolled in the program were screened for depression in the third trimester using the EPDS between July and March 2015. The remaining 535 women enrolled in the program were already delivered at the beginning of the study period. In total 22.7% (236/1038) women scored   13 on the EPDS. Mean score was 8.9 (range 0–28, standard deviation 5.5).

Of the women included in the study 41.2% (412/999) disclosed that they were HIV positive (Table 1). Almost one fifth of the sample (17.5%; 179/1020) was aged 14–19 years, with a mean age of 24.6 years. Most women (78.7%; 778/998) were unemployed, and 74.7% (587/785) were living in rented accommodation, mainly one-room apartments. Women screened were largely unmarried (63.8%; 630/987) and single.

None of the socioeconomic variables and maternal characteristics showed a statistically significant association with a high score on the EPDS. Only minor, non-significant increases in odds ratios could be found, with a trend toward increased risk for HIV positive women, women with low education, and for single and unemployed mothers to be. An exception to this trend was found in the case of mother being a tenant, which showed a contrary pattern with a tendency to protective effect rather than the expected increase (Table 2). Three of the variables related to food security - respondents were asked if they had cut the size of meals either for themselves and or for children, or if they had not eaten for a whole day due to lack of money. Variables relating to food security showed a significant association with high scores on the EPDS in group comparison (Table 1). When combining vulnerability factors in a social vulnerability index using PCA there was a marked and significant increase in the likelihood that a mother with a high score (1st quintile) on the social vulnerability index would score high on the EPDS scale (OR 4.15, CI 95% 2.99–5.76) (Table 2).

Only HIV status and social vulnerability showed and association of p<0.2, and was included in a multivariate regression model. This only slightly changed the odds ratios, maintaining a

high level of association between social vulnerability and high scores on the EPDS (AdjOR 4.08, CI 95% 2.92–5.72).

We investigated associations with a higher cut-off (EPDS 17)(33) in a similar way and similarly found no associations with any of the socioeconomic variables or maternal characteristics, except for variables relating to food security where there was a strong association. The social vulnerability index showed an even higher risk increase for the most vulnerable group being more than five times more likely to score above 17 on the EPDS screening compared to the better off (AdjOR 5.31, CI 95% 3.33–8–46, adjusted for HIV status).

DISCUSSION

Our study suggests that around one fifth of pregnant women experience depression in a disadvantaged peri-urban population in Swaziland. This prevalence is similar to estimates from similar settings in Latin America (34) and Asia (35). It is however considerably lower than results from studies in sub-Saharan Africa where a prevalence of more than 30% was detected in Zimbabwe (36)and South Africa (37). The reasons for this discrepancy are unclear and need further investigation. One potential explanation is an under-reporting of depressive symptoms as part of a culture of silence, where it is not appropriate to speak about one's illnesses and suffering (38). The Swazi culture has to some extent preserved many of its beliefs and perceptions compared to other countries in the region (39). This culture of silence and denial is known to have contributed to the extremely high levels of HIV in the country (38), and mental health is similarly affected by stigmatization and denial common to HIV (40). On the other hand, the EPDS does not explicitly mention mental health disorders. Another limitation to the study is potential selection bias. The Mentor Mother program is fully voluntary and it might be so that pregnant mothers with depressed mood chose not to enrol in the program. Further population-based studies are needed to confirm this. Furthermore, this study relies on data routinely collected within a health outreach project and there were no means to investigate validity of the cut-off of 13 as an indicator for depression. This level has proven to be adequate in a South African setting, but despite cultural similarities it might be the case that a lower cut-off is needed in Swaziland. Further studies are needed to establish if this is the case.

The study population displays multiple vulnerabilities, with a high rate of HIV positive mothers, high rates of unemployment and many single mothers. There are no statistics on the rate of single mothers in Swaziland, but it is fair to assume that there is a higher rate of unmarried and single women in the peri-urban areas than in the country at large, given the great influx of job seekers to these industrial areas. We could however not find associations between a high score on the EPDS assessment and presumed vulnerability factors, such as HIV positive status, unemployment and low education. The only variables that exhibited association with poor mental health were questions about food security, a proxy for poverty. When the different theoretical risk factors were added together in a social vulnerability index there was a strong association with high scores on the EPDS assessment. Causes of depression during pregnancy range from poverty and social insecurity to relational problems (41). The association to social factors is especially evident, with poor women being worse

off when it comes to mental health. The stressors of low social position and lack of economical means to support oneself and the expected child exacerbate the vulnerability of women in the lower socioeconomic strata (41).

Our results indicate that there is a need to address maternal mental health in the community in Swaziland. Despite the fact that the prevalence rate was lower than in neighbouring settings, more than a fifth of the pregnant women screened showed signs of depression; with almost 10% showing signs of severe depression. Routine screening during pregnancy is not the norm and health care staff is often ill prepared to address depression during the perinatal period. This study supports previous studies showing the feasibility of using community health workers to screen for depression (31). This encourages inclusion of depression screening in the standard package of CHWs, who should consequently also be appropriately trained to deliver psychosocial support for mild and moderate depression.

Despite the large impact on child health and the heavy burden of depression on public health, mental health is often neglected in antenatal care screening, especially in low–resource health care settings (41). The high uptake of antenatal care in many sub-Saharan African settings however offers a good opportunity to introduce screening for maternal mental health. Thus, more attention is needed to put maternal depression on the public health agenda and country specific data is needed to adequately address this challenge.

Conclusion

Depression was common among pregnant women in the peri-urban areas of Swaziland. Screening for depression using the EPDS is feasible and can be included in the community health worker standard tool box as a way to improve early detection of depression and to highlight the importance of maternal mental health as a core public health concern.

Acknowledgments

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Table 1

Background characteristics of study population and percentages of pregnant women scoring 13 or higher on EPDS scale for each category. Chi2-tests for group comparisons.

MATERNAL CHARACTERISTICS	N (%)	Scoring 13 and above on EPDS (%)	p-value
HIV status			
Negative	561 (57.7)	20.9	
Positive	412 (42.3)	25.5	0.089
Age			
14–19 years old	179 (17.2)	24.6	
20 years or older	841 (82.8)	22.4	0.52
SOCIOECONOMIC VARIABLES			
Mother's education			
Secondary level or higher	672 (68.8)	21.6	
Primary level	227 (23.2)	25.1	
None	78 (8.0)	24.4	0.508
Marital status			
Married or living with boyfriend	223 (22.6)	18.4	
Unmarried and single	630 (63.8)	23.8	0.417
Employment			
Formally or self-employed	210 (21.3)	18.1	
Unemployed	778 (78.7)	23.5	0.550
HOUSEHOLD CHARACTERISTICS			
Housing			
Homestead	198(25.2)	22.2	
Tenant	588 (74.8)	21.1	0.736
Water source			
Surface water	105 (10.4)	24.8	
Communal tap	163 (16.1)	22.1	
Tap on site	742 (73.4)	21.7	0.260
Sanitation			
Pit latrine or no toilet	896 (89.2)	23.3	
Flush toilet	109 (10.8)	17.4	0.165
Sharing toilet			
Yes	579 (76.3)	23.8	
No	180 (23.7)	16.1	0.029
FOOD SECURITY			
Cut size of meals in last 12 months			
Yes	157 (16.4)	52.5	
No	800 (83.6)	17.5	<0.001
Not eat for a whole day in last 12 months			

MATERNAL CHARACTERISTICS	N (%)	Scoring 13 and above on EPDS (%)	p-value
Yes	117 (12.3)	54.7	
No	835 (87.7)	18.9	<0.001
Cut size of meal for children in the last 12 months			
Yes	107 (11.3)	53.3	
No	837 (88.7)	19.2	<0.001
SOCIAL VULNERABILITY INDEX			
2nd to 5th quintile	831 (80.1)	17.0	
1st quintile (Worst off)	207 (19.9)	45.9	<0.001

Table 2

EPDS scores stratified by HIV status, age and SES indicators. Univariate logistic regression displaying odds ratios and 95% confidence intervals.

	EPDS score 13–30
HIV status	
Negative	Ref
Positive	1.29 (0.96–1–73)
Age	
20 years or older	Ref
14–19 years old	1.13 (0.78–1.65)
Mother's education	
Secondary or higher	Ref
Primary or none	1.19 (0.87–1.63)
Marital status	
Married or living with boyfriend	Ref
Unmarried and single	1.17 (0.87–1.58)
Employment	
Formally or self-employed	Ref
Unemployed	1.20 (0.85–1.70)
Housing	
Home-owner or parental homestead	Ref
Tenant	0.94 (0.63–1.38)
Social vulnerability index	
2nd to 5th quintile	Ref
1st quintile (lowest)	4.15 (2.99–5.76) [*]

[*]
p-value <0.01