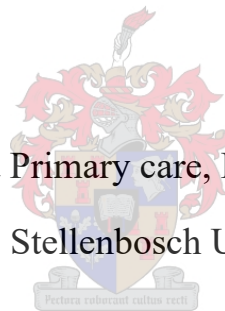# The prevalence of and risk factors for perinatal depression among women in the Knysna and Bitou sub-districts:

a descriptive cross sectional study.

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Declaration

I,.....**Lauren Hutton**.......the undersigned, hereby declare that the work contained in this assignment is my original work and that I have not previously submitted it, in its entirety or in part, at any university for a degree. I also declare that ethics approval for the study was obtained from the Health Research Ethics Committee of Stellenbosch University (Reference number: #0665).

December 2019

The prevalence of and risk factors for perinatal depression among women in the Knysna and Bitou sub-districts: a descriptive cross sectional study.

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Abstract

Background

Perinatal depressive symptoms occur in women during pregnancy, around childbirth and within one year after delivery. Women in low middle income countries (LMICs) are at risk, screening is poor and the prevalence in the Southern Cape region of South Africa is unknown.

Aim and objectives

The aim of the study is to determine the prevalence of and risk factors associated with perinatal depressive symptoms among women in the Knysna and Bitou sub-districts. The objectives are to compare antenatal and postnatal depressive symptoms, to evaluate associated risk factors and compare the effect of multiple versus single risk factors.

Methods

A descriptive cross sectional study design was used. Women aged 18 and above were sampled over a period of 10 months. Participation was voluntary and signed informed consent was obtained. Each participant completed the validated Edinburgh Postnatal Depression Scale (EPDS) and a risk factor assessment questionnaire. All documentation was available in Afrikaans, English and isiXhosa. A positive score for perinatal depressive symptoms was 13 or more. Referral for optional counselling or management was done as needed.

Results

In this study, the prevalence of perinatal depressive symptoms was high at 40.6%. The prevalence was similar for antenatal and postnatal groups with 40% and 40.5% respectively. Significant risk factors present among both groups were: no social support, use of alcohol and tobacco, race and a known or previous diagnosis of depression. More than one of the identified risk factors were present in 28.8% of depressed participants.

Conclusion:

Perinatal depression risk in the Knysna/Bitou sub-districts, as found using the EPDS screening tool, is high. Both antenatal and postnatal groups showed similar prevalence. Risk factors in this population were lack of social support, substance use, race and a current or previous diagnosis of depression; with the majority of participants having one risk factor. Prevalence was similar for those with no risk factors and two or more risk factors. The results highlight the need for effective screening of all antenatal and postnatal women.

Keywords: prevalence, perinatal depressive symptoms, antenatal care, postnatal care

Introduction

Within the last decade, primary health care (PHC) has redirected its focus within child health to the "first 1000 days". This catch phrase, which is now an American organisation as well as Western Cape Government strategic goal and priority, was introduced in 2008 after a Lancet Series was published on maternal and child malnutrition.[1] The period from conception until the child's second birthday has been identified as a vulnerable window, where appropriate intervention has the potential to greatly improve long term health outcomes.[2] The first two hundred and seventy of these days are those spent in utero, where poor maternal health and well-being have the ability to negatively impact the child, its family and the surrounding community.

The World Health Organisation (WHO) defines maternal health as "*The health of women during pregnancy, childbirth and the post-partum period*".[3] They also define health as a "*state of complete physical, mental and social well-being*".[3] While physical maternal wellness is prioritised in antenatal programmes, maternal mental illness and social well-being are less emphasised and screening for perinatal psychiatric conditions is not routinely done.[4]

The Millennium Development Goals have been replaced with the Sustainable Development Goals, where promotion of mental health is a health related target. [5] An estimation from WHO is that one in ten people worldwide suffer from depression or anxiety and that suicide is second only to road traffic accidents as the highest cause of mortality in adults aged 15-29 years.[6] In South Africa, the prevalence of depression was estimated at 9.7% amongst adults of varying races in a nationally representative household survey between the years 2002 and 2004, with a sample size of 4351.[7] In the 2010 global burden of disease statistics, it was reported that the figures were similar, at 10.4% in southern sub Saharan Africa. [8] In South Africa, women were found to be 1.75 times more likely to suffer from depression in their lifetime when compared to men. [7]

Globally, perinatal depression in women is common: in high income countries, the prevalence is approximately 13% whilst in research done in low and lower-middle income countries throughout the

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world, antenatal maternal depression has been estimated at 15.6%, with a prevalence of 19.8% for post-natal depression.[9] Women in low and middle income areas are especially known to be at risk of perinatal depression. [10]

Recent local research reveals a very high prevalence of both antenatal and postpartum depression in South Africa. In 2011, prevalence of antenatal depression in the rural Hlabisa sub-district in KwaZulu-Natal was reported to be 47% [11], although this was a small study with a sample size of only 109 women. Further research in urban KwaZulu-Natal published in 2012 revealed a 38.5% prevalence of antenatal depression, where a larger sample size of 387 women was used. [12] In the Western Cape, research conducted in the Witzenberg sub-district in the last two years revealed a post-partum depression rate of 50.3%, [13] and rates from peri-urban areas in Cape Town were estimated to be 39%. [14] Associated risk factors recognised in the fore-mentioned studies are poor social support, low financial income, intimate partner violence and teenage pregnancy.[11,12,13,14]

Having a previous history of depression and being HIV positive were also noted to increase the risk of depression. Education, secure employment and partner employment were recognised as protective factors against maternal depression.

The most widely used tool for screening for postpartum depression is the Edinburgh Postnatal Depression Scale. [15] The tool is a ten step questionnaire based on the DSM IV criteria to assist in recognising women who need further counselling and assessment. The tool has also been validated for use in antenatal depression screening and is available in many different languages, including English, Afrikaans and isiXhosa for use in the South African setting.

At present, the new edition of the National Maternity Care Guidelines in South Africa is in use. This edition became active in 2019. Screening for common perinatal mental disorders now forms part of this record, due to the efforts of the Perinatal Mental Health Project at the University of Cape Town, through policy briefing and advocacy. [16] The added page to the booklet asks 3 simple questions regarding excessive worrying, feelings of hopelessness and depression and suicidality. Nursing staff are then prompted to offer counselling depending on the score.

There have been no prevalence studies on perinatal depression in the Southern Cape region of South Africa to date. Knysna and Bitou form rural sub-districts in the larger Eden District within this region. From the 2011 census, the population in Knysna was 68 569 with an estimated growth rate of 2.77%, while the Bitou population was 49 162 with a growth of 5.22%. Roughly half the population are females. In 2011 it was estimated that 33.5% of the households were female headed in the Bitou municipality. [17] Knysna Hospital is the district hospital that currently serves the population, with the only labour ward for all deliveries. On average, one hundred and fifty deliveries are performed per month with thirteen clinics offering antenatal services – none of which routinely screened for

maternal depression. Thus, the prevalence of antenatal or postpartum depression is unknown. The paucity of psychiatry and psychology services also pose a challenge in this region, with a specialist psychiatrist visiting for outreach only once a month and a clinical psychologist twice a month. The remainder of the patients are seen by three professional nurses with mental health training as well as the doctors at Knysna Hospital.

Determining the prevalence of perinatal depression in rural sub-districts is essential to develop further recommendations for the identification, management and education of these patients in this region. The aim of this study is to determine the prevalence of and risk factors associated with perinatal depressive symptoms in the Knysna and Bitou sub-districts. The objectives are to compare the antenatal and postpartum prevalence, to evaluate the relationship between various risk factors and perinatal depression, as well as to evaluate the importance of, and compare the presence of a single risk factor versus multiple risk factors. The study seeks to provide information to assist health care providers in making changes to the way maternal mental health is addressed, and to narrow the 'screening to treatment' gap which currently exists.

Aim and Objectives:

The aim of the study is to determine the prevalence of and risk factors for perinatal depressive symptoms among women in the Knysna and Bitou sub-districts of the greater Eden District. The objectives are as follows:

1) To determine the prevalence of and compare antenatal and postnatal depression in the Knysna/Bitou sub-district.

2) To evaluate the relationship between age, race, marital status, education level, HIV status, presence of chronic disease, current employment and social support; and perinatal depression.

3) To compare the presence of single versus multiple risk factors.

4) To evaluate the importance of the presence of a single risk factor versus multiple risk factors.

Methods

For the purpose of this study, the terms antenatal, postnatal and perinatal will be used. Perinatal depression is defined by the American College of Obstetrics and Gynaecology as "*depression in a woman during pregnancy, around childbirth and within one year after delivery"*. This is different to the terminology in the new DSM V, where the term *peri-partum* is used, where onset of symptoms is limited to during pregnancy and within 4 weeks post-delivery.

Study design

This was a descriptive cross-sectional study, involving a questionnaire. In this scenario, a screening tool as well as a risk factor assessment tool was used. The screening tool has been validated for use in antenatal and postnatal populations. Both the screening tool and risk factor tool were available in 3 languages for use in South Africa (Afrikaans, English and isiXhosa). The study was analytical in that it analysed and compared factors in both the depressed and non- depressed participants.

Setting

The study took place in the Knysna and Bitou sub-districts within the greater Eden District. There are thirteen clinics spread across the area. Seven clinics are associated with Knysna and the remainder are located in the Bitou sub-district. These clinics have basic antenatal services for all pregnant women and provide postnatal check-ups as well as baby wellness follow up. There are two high risk antenatal opportunities for women, which take place at the Knysna Hospital and at Kwanokuthula clinic. Women attending high risk clinics are those referred with certain pregnancy related conditions or obstetrical challenges according to a suggested guideline in the district. This would include women who need delivery plans (previous caesarean section, malpresentation), those with co-morbid conditions (type 2 diabetes) or those with pregnancy related conditions (rhesus negativity, gestational hypertension). A specialist attends to the complicated obstetric problems at the high risk clinic at Knysna Hospital. Each pregnant woman is offered one antenatal dating scan during their pregnancy. The communities are largely Afrikaans, English and isiXhosa speaking.

The study occurred at selected facilities on designated antenatal and postnatal check-up days, during different seasons throughout one year. Facilities were notified of the process of the study and psychiatry staff who were required to assist in necessary counselling of patients were familiarised with the process.

Study population

The representative sample of women came from 6 of the 13 available clinics - 3 from the Bitou region and 3 from the Knysna region. They were selected based on their location in order to obtain a population that was representative of the area studied. These 6 clinics formed the strata from which a fixed number of participants was chosen. The clinics vary in the number of patients seen and the size of the area that it serves, thus the number of women from each site was stratified. Routine monthly reports were obtained from the 6 clinics over a period of 6 months in 2017, combining the numbers for those women who attended a booking antenatal visit and a postnatal visit. These numbers were used as a percentage of the total for the 6 clinics to calculate an estimate of how many women from each clinic would be required to participate, to provide a representative sample. See appendix 1.

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For the purpose of this study pregnant women younger than the age of 18 were excluded from participation. All other women, regardless of trimester, were included. A list of participant hospital numbers was kept by the researcher in order to prevent the same woman from taking part twice. The women presenting for antenatal services and postnatal check-ups do so randomly, and so participation was offered to every person attending.

Sample size

Current local estimated and expected rates for perinatal depression in South Africa are 30-40%. (1) An expected prevalence of 30% with a 5% precision and 95% confidence interval required a sample size of 200 people. In order to analyse the data using regression risk factor modelling, a sample size of 350 was suggested and used. The aim was for 50% of the total sample size to be antenatal women and the remainder postnatal.

Pilot study

A small pilot study was performed using 10 voluntary participants from the Knysna CDC in March 2018 to test the use of the consent, screening tool and risk factor tool; and to assess flow of data collection. Both tools took each participant approximately 5 minutes to complete. The participants were able to answer all questions and showed good understanding of what was required of them. Language specific documentation resulted in minimal input required from translators within the clinic. From the pilot study, no changes were made to the tools. The researcher was alerted to stationary requirements, with clipboards being recognised as a necessity for women to use to make completion of the tools easier.

Data Collection

Data collection occurred across 10 months to achieve the required sample size. The primary researcher was responsible for consent, organisation, score tallying and appropriate referral. A member of the nursing team was recruited at each facility to assist with the study explanation and consent to participate, which was only needed if language difficulties were present. Explanation of the study and consent occurred in small groups.

The EPDS was used as the screening tool. It has been validated for use in South Africa against the DSM IV criteria and is available in Afrikaans, English and isiXhosa. It is also validated for use in antenatal women. It is a 10 step screening tool, where a score of 10 - 12 represents possible depression and a score of 13 or more is recognised as a positive result. A question relating to deliberate self-harm, indicative of severity, required immediate referral. See appendix 2.

The risk factor assessment form was a simple tick sheet, attached to the EPDS, enquiring about the following information: age, race, relationship status, education, employment, antenatal/postnatal,

chronic disease (including HIV, Hypertension, Diabetes, Epilepsy and Asthma), previous or known depression, substance use and emotional support. See appendix 3.

The screening and risk factor tools were completed individually by participants, in a private area within the clinic. The tools were provided in the participant's language of choice, either Afrikaans, English or isiXhosa. On completion of the screening tool, the participants individually handed them in to the researcher, who scored them. This was followed by a brief one-on-one meeting with the researcher. This was a short private meeting where the score was tallied and the result explained to the participant, with a referral document provided for optional further counselling, if needed.

Ethical considerations

Ethics approval was granted by the Health Research Ethics Committee of Stellenbosch on 15 September 2017, protocol number 0665 and reference number S17/08/143. Renewal was required and granted on 3 September 2018. The Western Cape Department of Health provided permission to proceed with reference WC_201801_030. See appendix 4, 5 and 6.

Participation in this study was voluntary and consent forms were signed by each woman. Appropriate counselling was offered to those women with positive depression scores, and referral for admission advised for those women with suicidal intent.

Analysis

Data preparation included correct representation on a spread sheet in order to determine the prevalence. Initial exploration of the data involved addressing the associated factors and their relationship to perinatal depression. Data analysis was done using Statistical Package for the Social Sciences (SPSS). Both descriptive and inferential categorical data was analysed. To analyse the data, Spearman's rank correlation co-efficient was used for ordinal data (e.g.: employment, education, social support.) Pearson's product moment correlation co-efficient was used for interval and ratio data. Analysis of variance (ANOVA) was used for continuous data, namely participant age and score. Odds ratios and frequencies were calculated for the risk factors, as well as for comparison between antenatal and postnatal depression. Regression analysis using a linear regression model was used to compare selected covariates. Correlations have been visualised in tabulated format and histograms. The mean score on the EPDS was also represented.

Results

A total of 350 women were screened in this study. The age of participants ranged between 18 and 43, with a mean of 27.8 years. There were 21 teenagers (aged 18 and 19) and 57 women aged 35 and older, placing them in the advanced maternal age category. 207 (59.1%) of the women were of

African race and 315 (90%) had at least a primary education. The demographics of the participants, including the above characteristics as well as relationship status and employment are represented in table I.

Of the 350 participants, 180 (51.7%) of the women were antenatal and the remainder were postnatal, having given birth within the past 12 months. Two women did not disclose whether they were antenatal or postnatal, leaving the total for interpretation at 348. The scale was divided into no depression (score of 9 or less), possible depression (score of 10 - 12) and depression (score of 13 or more). According to the EPDS, a score of 13 or more is interpreted as "suffering from a depressive illness of varying severity." The mean score obtained for all women was 11.34 with 40.6% of the total number of participants having a positive screening result on the EPDS.

Table I: Participant demographics

Demographic category	All n = 350 (%)
Ethnicity	
African	207 (59.1)
Coloured	127 (36.4)
White	9 (2.6)
Other	6 (1.7)
Undisclosed	1 (0.2)
Relationship	
Single	123 (35.1)
Married	88 (25.2)
Stable	138 (39.5)
Undisclosed	1 (0.2)
Employment	
Unemployed	207 (59.1)
Part-time	45 (12.9)
Employed	98 (28)
Education	
None	33 (9.4)
Primary	77 (22)
Matric	194 (55.4)
Tertiary	44 (12.6)
Undisclosed	2 (0.6)

The difference between the prevalence of depression between the antenatal and postnatal group was minimal, with 40.% of the antenatal group and 40.5% of the postnatal group having positive screening results with a score of more than 13 (Table II).

Table II: Depression score category with total, antenatal and postnatal prevalence

	Total N = 350 (%)	Antenatal N = 180 (%)	Postnatal N = 168 (%)
No depression	134 (38.3)	73 (40.6)	61 (36.3)
Possible depression	74 (21.1)	35 (19.4)	39 (23.2)
Depression	142 (40.6)	72 (40)	68 (40.5)

- N = 350; where antenatal = 180, postnatal = 168, undisclosed = 2

The risk factors analysed using the risk factor tool sheet included presence of co-morbidities, social support, previous or current diagnosis of depression, education, substance usage, and employment.

Co-morbidities included hypertension, diabetes, epilepsy, asthma and HIV. A total of 147 (42%) of the total participants had one or more co-morbidity. HIV was the most common, seen in 96 (27.4%) women, comparable to an HIV prevalence of 21.3% among women who gave birth at Knysna Hospital from January to June 2019. The other 4 illnesses each only being reported in less than 10 % of the participants. Only 41 (11.7%) of the total participants had been previously diagnosed with depression or were currently on treatment for a depressive illness, with 23 (56.1%) scoring positively with the EPDS. The mean score of participants with a known or previous diagnosis of depression was 13.8.

Social support was divided into categories of none, family, spouse and friends. While only 27 (7.7%) of the total participants reported having no social support, 19 (70.4%) of these were in the depressed category, indicating a significant risk factor. The average score of the total participants who had no social support was 14.74.

The use of substances in the form of alcohol and tobacco, was reported in 62 (17.7%) women, of which 38 (61.3%) fell into the depressed category, with the average score among the 62 participants being 13.74 - both statistically significant with p-values <0.05.

While unemployment and no education are known risk factors for perinatal depression, this did not reach statistical significance in this sample group used, as shown in the results below (Table III).

Descriptive data showing the ages of the participants in relation to the depression score was shown using the mean, standard deviation and 95% confidence intervals. The mean age was similar for all groups, at 27 years, with the extremes of ages represented in each of the three depression categories. Analysis of variance was used and confirmed no statistically significant association between age and depression in this sample studied.

Table III shows the risk factors seen in those participants who scored in the category "depression", with actual numbers, percentages within each category and p-values using Pearson Chi Square. Table IV shows the risk factors against the average score as a number, with 95% confidence intervals and p-values between groups.

Table III: Positive screening test (depression) and risk factors with p-value (Pearson Chi Square).

	Depression N = 142 (% within category)	P-value (Pearson Chi Square)

Co-morbidities
  Hypertension
  Diabetes
  HIV
  Asthma
  Epilepsy
	66 (44.9)
	15 (46.9)
	8 (53.3)
	43 (44.8)
	3 (37.5)
	2 (50)
		0.352
		0.651
		0.334
		0.482
		0.489
		0.859

No Social support	19 (70.4)	0.004
Known/Previous Depression	23 (56.1)	0.097
No Education	14 (42.4)	0.573

Substance Usage
  Cigarettes
  Alcohol
  Drugs
	38 (61.3)
	31 (63.3)
	9 (52.9)
	0 (0)
		0.000
		0.002
		0.059
		0.198

Unemployment	84 (40.6)	0.669

Table IV shows the risk factors against the average score as a number, with 95% confidence intervals and p-values between groups.

Table IV: Risk factors with mean scores, 95% CI and p-values.

	N = 350	Mean score	95% Confidence interval	P-value (significance between groups)

Ethnicity
  African
  Coloured
  White
  Other
  Undisclosed
	207
	127
	9
	6
	1
		10.45
		12.55
		14.89
		10.43
			9.75 - 11.14
			11.55-13.55
			10.48-19.30
			4.12-16.55
				0.001

Relationship Single	123	12.04	11.09-12.99	0.149

Married Stable Undisclosed	88 138 1	10.59 11.19	9.52-11.66 10.22-12.16	

Employment
  Unemployed
  Part-time
  Employed
	207
	45
	98
		11.42
		11.87
		10.93
			10.68-12.16
			10.05-13.68
			9.87-11.98
				0.601

HIV positive HIV negative	96 254	11.92 11.12	10.77-13.07 10.46-11.78	0.221
Depression No depression	41 309	13.8 11.01	11.77-15.83 10.43-11.59	0.002

Substances
  Yes
  No
  Undisclosed
	62
	287
	1
		13.74
		10.79
			12.31-15.17
			10.18-11.14
				0.000

Social support
  Yes
  No
	323
	27
		11.05
		14.74
			10.47-11.64
			12.54-16.94
				0.001

Regression analysis using a linear regression model of the depression score and selected covariates (based on the initial analysis) was done (Table V). Substance use, social support, race and previous or known depression were found to be significant factors associated with depression adjusted for age, relationship and antenatal status. Having a social support network was associated with a lower depression score, while exposure to substances and having known or previous depression was associated with a higher depression score. A regression tree of all the covariates was done with categorical variables and showed no hidden risk factors. Table V represents the regression analysis comparing multiple variates, with mean difference, 95% confidence intervals and p-value.

Table V: Multiple linear regression analysis results.

Co-variate	Mean difference	95% confidence interval	P-value
Support	-3.4	-5.5 to -1.4	0.001
Depression	1.9	0.2 to 3.7	0.032
Substances	1.8	0.2 to 3.3	0.023
Race: coloured	2.3	1.03 to 3.6	0.000
Race: white	4.04	0.55 to 7.5	0.023

Percentages were calculated for participants who scored positively for depression and had none, one or more than one of the significant risk factors as identified in table V above. A total of 41 (28.8%) of the depressed participants had more than one of the significant risk factors identified by the initial analysis. This was the smallest subgroup, compared to 43 (30.3%) of depressed participants having no risk factors and 58 (40.9%) having one of the identified risk factors from table V. Refer to table VI below for comparison of number of risk factor numbers among those participants with a score of 13 and above on the EPDS.

Table VI: Depressed participants and number of significant risk factors.

Number of risk factors (N = 4)	Participants (N = 142)	Percentage (%)
0	43	30.3
1	58	40.9
2	32	22.5
3	9	6.3
4	0	0

Discussion

The EPDS is a screening tool for recognising women who may be suffering from depression. A score of 13 or more is interpreted as "suffering from a depressive illness of varying severity". From the results of this study, using a population sample of 350 women, the prevalence of perinatal depressive symptoms in the Knysna and Bitou sub-districts was 40.6%. The prevalence was similar for both the antenatal and postnatal groups, with only a 0.5% difference. This prevalence is high, with a further 21.6% falling into the category of "possible depression". Only 37.8% of the sample were not depressed according to the screening tool.

The findings are in keeping with current local research, where the prevalence of antenatal and postnatal depression ranges from 30 – 50%. [11,13,14] These findings confirm the concern that figures are much higher in South African women when compared to other LMICs and even more so when compared to global rates. Furthermore, the findings also confirm the similarity in prevalence results among antenatal and postnatal depression, as is found in many studies done in different countries and seen reported in a recent systematic review by Woody et al. [19]

The majority of the participating women were of African race with a large proportion being unemployed, despite more than half of the participants having completed matric. The South African

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Depression and Anxiety Group recognise the link between depression and unemployment among the general population. [20] Unemployment despite education is not a unique problem to the Knysna and Bitou sub districts, but rather fits in with a greater national problem, where unemployment rates among those aged 25 to 34 years old who have a matric are 32.4%. [21] This being the nearest age group to participants from this study sample. Neither unemployment nor lack of education were identifiable risk factors in this study, reaffirming that screening for mental illness cannot be limited to certain population groups.

Important statistically significant risk factors identified for depression, within this study sample, were: use of alcohol and tobacco, no social support, previous or known diagnosis of depression and race. Risk factors for perinatal depression such as a lack of social support and exposure to substances have been found in other South African studies, done in communities in KwaZulu Natal and the Western Cape. [11,12,13,14]

No social support was found to be a risk factor for having depressive symptoms, with the participants having a higher mean score on the EPDS. While the majority of the participants did indicate that they had some form of social support – whether it was from family, spouse or friends – 70% of the participants who indicated no social support had depressive symptoms. It is known that no social support has been linked to depression and anxiety in different populations. [22] Women during pregnancy and in the postpartum period require greater social support. The risk factor tool in this study only gave participants an opportunity to select sources of support, yet the level of that support was not explored. It would be important in future work within this community to determine perceived definitions of support, to understand the quality of support provided and to explore social expectations from women in the perinatal period.

Among different racial groups, being white and coloured were risk factors for obtaining higher scores on the screening tool, however the subgroups were small and the significance of this interpretation would need to be expanded on with larger numbers in future research. The African population is the largest in the area studied according to the 2011 census, forming 40.6% of the population. Further qualitative data involving more personalised questions may give insight into how antenatal and postnatal women understand and experience their mental state and well-being.

While having HIV was the most commonly reported comorbidity by the participants in this study, it was not a risk factor for perinatal depression. In this population, similar rates of depression were found among HIV positive and HIV negative women. While South Africa is known to have the largest HIV epidemic in the world, dedicated work into population knowledge of HIV status, antiretroviral therapy uptake and prevention of mother-to-child transmission has resulted in positive changes in the perceptions of HIV. [18]

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Only 41 (11.7%) of the total study population had a known or previous diagnosis of depression. This is low in comparison to the study findings that 40.6% had a positive screening result and thus were likely to be suffering from a depressive illness of varying severity. It is known that having a previous or current diagnosis of depression is a risk factor for perinatal depression. [11] This difference is large and highlights possible diagnostic deficits in the state sector, in terms of screening for, diagnosing and treating mental illnesses, particularly depression and anxiety.

Of those participants who scored positively for depression in the screening tool, the majority had none or 1 of the significant risk factors that were identified in this group. A total of 41 (28.8%) of the women had more than one risk factor - with combinations of race (white or coloured), depression, substance use and not having any social support. However, a total of 43 (30.3%) of participants scoring positively for depression had none of the risk factors identified. Thus, there was no significant difference between those with none, 1, 2 or more risk factors within this group of women. This highlights the fact that screening cannot be limited to certain groups of women, but is required for all perinatal women in the region to ensure adequate identification of depression, appropriate referral and management.

Limitations

Women aged 18 and older were invited voluntarily to participate in this study. Thus teenagers between the ages of 13 and 17 were not represented. It is expected that those in the younger age groups may be a vulnerable, high risk group. Potential risk factors such as unplanned pregnancy, gestational age and the presence of intimate partner violence were not questioned.

Recommendations

Local interviews with smaller groups of women, as part of antenatal training or qualitative research, may provide more personalised, in depth and valuable information in order to improve current mental health services for perinatal women in the Knysna and Bitou sub districts. Training of health care workers within the hospital and clinics providing antenatal and postnatal care, with regard to early identification and appropriate management of women at risk, may improve health outcomes.

With the updated national maternity record highlighting the importance of screening for mental health conditions, future research investigating any changes in early recognition, referral and treatment of women at risk in this area may be beneficial. Follow up of those screened and referred, through quantitative research and cohort studies will give insight into the success of the new additional pages and prompts in the 2019 version of the maternity case record.

While the maternity case record has the above highlighted changes, it does not assist in screening postnatal women for depression. The Western Cape circulated a postnatal care policy in 2016, which

prompts nursing staff in the clinical assessment of the woman up to 6 weeks post-partum. There are three simple questions relating to mental health as part of screening. There is however no formal documentation or screening thereafter and so opportunistic health promotion would need to occur at the well-baby visits throughout the first year of the child's life. The new road to health chart in South Africa emphasises child health and early recognition of the child at risk, but does not prompt the health care worker to assess the mental health of the mother. This addition could assist in identifying women with possible postnatal depression, which may contribute to better care and the long term health of the mother and child. In the interim, training of primary health care staff involved in antenatal services and well-baby visits, in screening for perinatal depression is recommended.

Finally, from this study the significant risk factors allude to social determinants of health in this community. A multidisciplinary team including doctors, nursing staff, social workers, ward based outreach teams and psychiatry nurses is required to support these women in order to have a positive effect on maternal health.

Conclusion

In this study, using the EPDS as a validated screening tool, the prevalence of perinatal depressive symptoms in women attending antenatal clinics in the Knysna and Bitou sub-districts was found to be 40.6%. The prevalence was similar for both antenatal and postnatal women. Multiple possible risk factors were investigated and exposure to substances, poor social support, race and a previous or current diagnosis of depression were identified as significant. The majority of the depressed participants had only 1 risk factor, with similar numbers for those having none and more than 1 of the identified risk factors. The results of this research highlight the need for regular screening of mental illness in all antenatal and postnatal women, with relevant referral for psychiatric assessment and involvement of the multidisciplinary team, in order to improve maternal well-being and the direct influence on the child that she delivers.

References

1. Black R, Allen L, Bhutta Z, Caulfield L, de Onis M, Ezzati M et al. Maternal and child undernutrition: global and regional exposures and health consequences. The Lancet. 2008;371(9608):243-260.
2. Ramachandran P. Maternal and child nutrition: The first 1,000 days. Indian Journal of Medical Research. 2015;142(2):231.
3. World Health Organisation [Internet]. Maternal Health. [Updated 2016] Available from: http://www.who.int/topics/maternal_health/en. [Accessed 10 July 2017].

4. Honikman S, van Heyningen T, Field S, Baron E, Tomlinson M. Stepped Care for Maternal Mental Health: A Case Study of the Perinatal Mental Health Project in South Africa. PLoS Medicine. 2012;9(5):e1001222.

5. World Health Organisation Department of Health [Internet] Sustainable Development Goals. [updated 2016] Available from: http://who.int/sdg/en [Accessed 15 July 2017].

6. World Health Organisation Department of Health statistics (2014) Global Health Estimates 2013: deaths by cause, age and sex; estimates for 2000–2012: Geneva [Accessed 15 July 2017]

7. Tomlinson M, Grimsrud AT, Stein DJ, Williams DR, Myer L. The epidemiology of major depression in South Africa: results from the South African stress and health study. SAMJ: South African Medical Journal. 2009 May;99(5):368-73.

8. Ferrari A, Charlson F, Norman R, Patten S, Freedman G, Murray C et al. Burden of Depressive Disorders by Country, Sex, Age, and Year: Findings from the Global Burden of Disease Study 2010. PLoS Medicine. 2013;10(11):e1001547.

9. Fisher J, Cabral de Mello M, Patel V, Rahman A, Tran T, Holton S et al. Prevalence and determinants of common perinatal mental disorders in women in low- and lower-middle-income countries: a systematic review. Bulletin of the World Health Organization. 2011;90(2):139-149H.

10. Bennett H, Einarson A, Taddio A, Koren G, Einarson T. Prevalence of Depression During Pregnancy: Systematic Review. Obstetrics & Gynecology. 2004;103(4):698-709.

11. Rochat T, Tomlinson M, Bärnighausen T, Newell M, Stein A. The prevalence and clinical presentation of antenatal depression in rural South Africa. Journal of Affective Disorders. 2011;135(1-3):362-373.

12. Manikkam L Burns J. Antenatal depression and its risk factors: An urban prevalence study in KwaZulu-Natal. South African Medical Journal. 2012;102(12):940.

13. Stellenberg E Abrahams J. Prevalence of and factors influencing postnatal depression in a rural community in South Africa. African Journal of Primary Health Care & Family Medicine. 2015;7(1).

14. Hartley M, Tomlinson M, Greco E, Comulada W, Stewart J, le Roux I et al. Depressed mood in pregnancy: Prevalence and correlates in two Cape Town peri-urban settlements. Reproductive Health. 2011;8(1).

15. Cox J, Holden J, Sagovsky R. Detection of postnatal depression. Development of the 10-item Edinburgh Postnatal Depression Scale. The British Journal of Psychiatry. 1987;150(6):782-786.

16. McKenna A, Abrahams Z, Marsay C, Bass J, Honikman S. Screening for common perinatal mental disorders in South Africa: policy briefing and advocacy outcomes.

17. Statistics South Africa [internet]. Local Municipality Statistics/Knysna/Bitou. [Updated 2011.] Available from http://www.statssa.gov.za/?page_id=993&id=knysna-municipality [Accessed 7 Apr. 2019].

18. AVERT. (2019). *HIV and AIDS in South Africa*. [online] Available at: https://www.avert.org/professionals/hiv-around-world/sub-saharan-africa/south-africa [Accessed 7 Apr. 2019].

19. Woody, C., Ferrari, A., Siskind, D., Whiteford, H. and Harris, M. (2017). A systematic review and meta-regression of the prevalence and incidence of perinatal depression. *Journal of Affective Disorders*, 219, pp.86-92.

20. South African Depression and Anxiety Group [Internet]. Available from http://www.sadag.org/index.php [Accessed 22 May 2019].

21. Statistics South Africa [internet]. National economic growth. [updated 2019] Available from http://www.statssa.gov.za [Accessed 22 May 2019].

22. Santini, Z.I., Koyanagi, A., Tyrovolas, S., Mason, C.A., & Haro, J.M. (2015). The association between social relationships and depression: a systematic review. *Journal of affective disorders, 175*, 53-65 .

Appendix 1:

Stratified numbers from each clinic for sample

CLINIC	1ST BOOKING	POSTNATAL	PERCENTAGE OF TOTAL (%)	ESTIMATED SAMPLE SIZE (AS A % OF 350)	ACTUAL NUMBERS OBTAINED
KNYSNA CDC	400	219	32	112	116
SEDGEFIELD	156	75	12	42	43
HORNLEE	186	97	14	49	49
KWANOKUTHULA	339	131	24	84	85
KRANSHOEK	102	58	8	28	27
PLETT TOWN	121	80	10	35	30