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MENTAL HEALTH STATUS AND ASSOCIATED RISK FACTORS AMONG WOMEN SEEKING MATERNAL AND CHILD HEALTH SERVICES IN KIAMBU COUNTY, KENYA

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ABSTRACT

Background: There is an increase in mental health conditions during pregnancy, leading to complications that increase maternal mortality and morbidity. Physiological changes during pregnancy often mask the early symptoms, leading to delayed treatment.

Objective: To determine the prevalence and risk factors of poor maternal mental Health among antenatal women seeking maternal and child health services in Kiambu and Thika level 5 hospitals, in Kiambu County, Kenya.

Study design: Descriptive cross-sectional study.

Setting: Kiambu and Thika County Referral Hospitals maternal and child health clinics (MCH).

Respondents: Stratified random sampling method was used to select 130 antenatal women in the Kiambu and Thika level 5 hospitals' MCH.

Results: The proportion of antenatal women with poor maternal mental health (MMH) was 34.6%, which was statistically significantly higher than the global estimates of 15.6% in low and medium-income Countries (LMIC) ($Z=5.975$, $p<0.05$). Respondents who experienced major life stressors were more likely to report poor MMH (51.1%) compared to those who did not (20%). Both crude and adjusted analyses confirmed strong statistical significance (cOR = 2.35, 95% CI: 1.50–3.69, $p = 0.001$; aOR = 4.17, 95% CI: 1.59–11.59, $p = 0.004$).

Conclusion: There is a high Prevalence of poor MMH among pregnant women.

Recommendation: Integration of MMH management services in MCH by the Ministry of Health, Kenya.

Keywords: Pregnant women, mental health

INTRODUCTION

Maternal mental illness is a global problem affecting 10-13% women during antenatal and postnatal period respectively in developing countries and 15.6%-19.8% antenatal and postnatal respectively in LMIC [1]. Exposure to risk factors for instance, social cultural, past traumatic events, deranged physiology/hormonal changes and substance abuse are implicated in escalating prevalence of antenatal women with poor MMH [1].

Symptoms of poor MMH can be detected early using Edinburgh postnatal depression scale (EPDS) screening tool during regular antenatal care (ANC) [2]. There is evidence of positive maternal outcome among women who are diagnosed early and managed by non-specialist health care providers. The outcome of untreated poor MMH results to a cascade of adverse events on the woman, fetus, family and the community [3].

Newly diagnosed diseases during pregnancy for example, HIV, hypertension, diabetes mellitus, anemia and sexually transmitted diseases can trigger poor MMH and vice versa. Neurological conditions in neonates are attributed to exposure to poor MMH during pregnancy; this includes prematurity, low birth weight, effects on the hypothalamic-pituitary-adrenal axis, frontal brain development and increase cortisol that increase morbidity and mortality in the neonates [4].

Lack of social support, violence, unrealistic cultural expectations, for example, sex of the baby and single motherhood leads to rejection of the pregnancy. A study done in

Canada indicated that pregnant women may mask deteriorating mental health and avoid seeking professional help despite being aware of the negative implication; due to cultural expectations that presume expectant women to be automatically happy [5]. Women also, trivialize symptoms of poor MMH to avoid stigma and negative interpretations for example, "being weak and not loving your child" [6].

Materials and methods

Study design

A cross sectional study design was conducted between October to November 2023 at Kiambu and Thika level 5 hospitals in Kiambu County, Kenya, as baseline assessment for a quasi-experimental study. To contextualize the respondent's mental health status and risk factors at a single point in time cross-sectional study designed was considered most appropriate.

Sampling procedure

According to information gathered from the MOH 711 register where documentation of all services offered during antenatal visits are recorded. There are approximately 237 "first visit" women each month in both Kiambu and Thika Level 5 hospitals. The total sample size calculated using fisher formula was 125. An additional 5 respondents were added to take care of incomplete questionnaires. The total sample size was therefore, $n=130$ respondents. Approximately, 65 respondents per site as 237 was the sample frame. To ensure random selection, the n th number was calculated by dividing by $237/65$, this

gave us 3.6 approximately 4. This meant that every 4th first visit woman would be recruited to the study. To get the first respondent, simple random sampling method was used. This was done by writing NO on three pieces of paper and YES on one. The papers were folded and the first 4 first visit antenatal women were requested to pick. The 2nd woman picked YES and became the first respondent; from then, every 4th first visit woman was recruited in the study.

Eligibility criteria

Inclusion Criteria

Women attending first ANC visit at Kiambu and Thika level 5 hospitals. This population was selected because it is the earliest time health workers interact with the expectant woman. This information was necessary to enable the researcher institute intervention early and avert pregnancy complications brought about by Poor MMH.

Exclusion criteria

Women previously diagnosed with mental health conditions were excluded. This is because they are already informed of their condition and are on professional follow up.

Study setting

The study was conducted in Thika and Kiambu level 5 hospitals located in Kiambu County, Kenya. The hospitals were purposively selected since they are the largest in the County and attend to antenatal women of all social classes. They too, have mental health services provided at different levels, for example, counseling by mental

health nurse or counselors, social worker services, psychologist reviews services and psychiatrist review. The sites were suitable to handle all respondents who screened positive for MMH.

Study tool

A study questionnaire was used to obtain respondents socio demographic data. The Edinburgh postnatal depression scale (EPDS) screening tool was used to establish the MMH status. EPDS has 10 multiple choice questions; each answer is given a score of 0 to 3 with increasing symptoms severity to a total of 30. The total score is achieved by adding each question score. A cut of point of 12 was set to separate those with poor and good MMH this cut off was advised by literature review [7]. A score equal to or above 12 may be an indicator of poor MMH and a sign that further investigation and management is required. The estimated sensitivity of the Edinburgh postnatal depression screening tool is 75% to 100% while the specificity is 76% to 97% [8]. The study questionnaire was designed to gather information that is tailored to MMH needs of the antenatal women in the County. To test the reliability of the study tool, pretest was done at Gatundu level-5 hospital that generated a Cronbach's Alpha of 0.952 which was considered suitable.

Study procedure

Recruitment was done on women attending the first ANC visit. Women were informed about the study before signing a coded consent. The study questionnaire and EPDS were assigned the same code as the consent. The questionnaires were filled by the

researcher and trained research assistance. Data was submitted to a server that generated a real time excel sheet. Analysis was done using SPSS version 27.

Data management

Data Entry, Analysis and Presentation

The questionnaires were checked for completeness and uploaded into statistical package for social science (SPSS) version 27 for statistical analysis. Descriptive statistics was done to generate the socio-demographic and EPDS scores. Chi-square test for independence was used to access the association between variables. Odds ratio was done to test association of risk factors and respondents MMH status. All the tests were carried out at 5% significance level. Data was presented in tables.

Ethical Consideration

Ethical approval to conduct the study was granted by Kenyatta University Ethical and review committee (approval number PKU/2761/E1886), further; research permit to carry out the study was granted by National Commission for Science, Technology and innovation (NACOSTI) license NO: NACOSTI/P/23/28356. Permission to carry out the study was sought from Kiambu County Health Board (Ref no: KIAMBU/HRDU/AUTHO/2023/08/14/RAIJI

JM). Permission to conduct the study was sought from Thika and Kiambu referral hospital administration. Permission was granted and the following approval letters given. (Ref: CGK/TL5H/12/23/2023) and (Ref No: KBU/STAFF17/VOL.LIV (54)/16. Consent was sought from respondents after explanation of the study process. Respondent's anonymity and confidentiality was assured by coding study tools. They were also informed that exit from the study would not have retaliation. Respondents who screened positive for poor MMH were referred to the hospitals' mental health department for follow-up.

Results

Socio demographic characteristics of the respondents

The age of the respondents was between 14 to 48 years with an average age of 26.06 years (SD =6.514 years). Those between 20 to 35 years were the majority at 73.1 % (n=95). Those above 35 years were 14.6% (n=19) and 12.3% (n=16) teenagers. On marital status, the married were the majority at 73.1% (n=95), single women were 23.8% (n=31) and 3.1% (n=4) were separated. All the respondents had attained at least primary level of education. Approximately, 2/3 of the respondents, 69.2% (n=90) were not employed. This is shown in table 1 below

Table 1: Social-demographics characteristics

TVET- Technical and Vocational Education and Training, KSh- Kenya shillings

Variable	Description	Count (n=130)
Age	Below 20 years	16(12.3%)
	20 to 35 years	95(73.1%)
	Above 35 years	19(14.6%)
Marital Status	Married	95(73.1%)
	Single	31(23.8%)
	Separated	4(3.1%)
Level of education	Primary	15(11.5%)
	Secondary	69(53.1%)
	TVET	34(26.2%)
	Tertiary	12(9.2%)
Source of income	Not Employed	90(69.2%)
	Self employed	14(10.8%)
	Employed	26(20%)
Monthly Income	No income	87(66.9%)
	KSh 10,000/= or Less	24(18.5%)
	Between KSh 10,001/= and KSh 30,000/=	16(12.3%)
	Between KSh 30,001/= and KSh 60,000/=	3(2.3%)
Religion	Christian	129(99.2%)
	Others	1(0.8%)

Demographic Characteristics and Maternal Mental Health Status

The mean EPDS score was 10.78(SD=4.199). In terms of MMH status, the results showed that majority of the respondents 65.4% (n=85) recorded an EPDS score below 12/30. This indicates that 65.4% of the women had good MMH. The proportion of the respondents who screened positive for poor MMH was 34.6% (n=45) which was higher than World Health Organization (WHO) estimates for LMIC of 15.6%. A one sample Z-test for proportion showed that the proportion of

women in Kiambu County with poor MMH was significantly higher than the WHO estimates for LMIC ($Z=5.975$, $p<0.05$). Despite variations in MMH status within various socio-demographic categories, Chi-square test for independence showed no statistical significant association between the socio demographic characteristics of the respondents and the MMH status at 95% confidence level as shown in table 2.

Table 2: Respondents Demographic Characteristics and EPDS Scores

Social demographic characteristics	Maternal Mental Health categories	Chi -square	P value
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	EPDS <12 Good MMH	EPDS >12 Poor MMH		
Age			0.695	0.706
Below 20 years	10(62.5%)	6(37.5%)		
20 to 35 years	61(64.2%)	34(35.8%)		
Above 35 years	14(73.7%)	5(26.3%)		
Marital Status			1.689	0.430
Married	60(63.8%)	35(36.8%)		
Single	23(74.2%)	8(25.8%)		
Separated	2(50%)	2(50%)		
Level of education			2.098	0.552
Primary	9(60%)	6(40%)		
Secondary	45(65.2%)	24(34.8%)		
TVET	21(61.8%)	13(38.2%)		
University	10(83.3%)	2(16.7%)		
Source of income			0.591	0.744
Not Employed	59(65.6%)	31(34.4%)		
Self employed	8(57.1%)	6(42.9%)		
Employed	18(21.2%)	8(30.8%)		
Monthly Income			6.154	0.104
No income	57(65.5%)	30(34.5%)		
KSh 10,000/= or Less	13(45.2%)	11(45.8%)		
Between KSh 10,001/= and KSh 30,000/=	14(87.5%)	2(12.5%)		
Between KSh 30,001/= and KSh 60,000/=	1(33.3%)	2(66.7%)		
Religion			1.904	0.346
Christian	85(65.9%)	44(34.1%)		
Others	0	1(100%)		

EPDS=Edinburg Postnatal Depression Scale, TVET=Technical and Vocational Education and Training, KSh= Kenya shillings

Maternal Mental Health Status and Associated Risk Factors

Based on the results in table 3, respondents with chronic conditions were more likely to report poor MMH (6.7%) compared to those without (1.2%). The crude odds ratio (cOR = 2.23, 95% CI: 1.20–4.14, $p = 0.011$) indicated a

significant association. However, after adjustment for confounders, the association was not statistically significant (aOR = 4.23, 95% CI: 0.42–96.39, $p = 0.254$). A similar trend was observed among respondents who experienced sexual abuse, where poor MMH (4.4%) compared to none among respondents who had not experienced sexual abuse.

Although the crude association was significant (cOR = 2.22, 95% CI: 1.20–4.10, $p = 0.011$), this relationship was not maintained after adjustment (aOR = 3.03, 95% CI: 0.62–16.91, $p = 0.175$).

Emotional abuse demonstrated a robust association with poor MMH. Respondents reporting emotional abuse had a higher prevalence of poor MMH (15.6%) compared to non-abused respondents (3.5%). Both crude and adjusted analyses revealed statistically significant relationships (cOR = 2.21, 95% CI: 1.36–3.59, $p = 0.001$; aOR = 2.03, 95% CI: 1.62–12.41, $p = 0.012$).

Respondents who experienced pregnancy rejection by their communities due to single motherhood showed higher rates of poor

MMH (24.4%) compared to those who did not experience rejection (11.8%). The results revealed that pregnancy rejection was a significant factor after adjustment (aOR = 0.33, 95% CI: 0.12–0.93, $p = 0.037$), though the crude odds ratio suggested a weaker relationship (cOR = 0.60, 95% CI: 0.36–0.98, $p = 0.04$). Lastly, exposure to major stressors was the most significant predictor of poor MMH. Women who experienced major stressors were more likely to report poor MMH (51.1%) compared to those who did not (20%). Both crude and adjusted analyses confirmed strong statistical significance (cOR = 2.35, 95% CI: 1.50–3.69, $p = 0.001$; aOR = 4.17, 95% CI: 1.59–11.59, $p = 0.004$).

Table 3: Maternal Mental Health Status and Associated Risk Factors

Respondents Characteristics	Outcome	Poor MMH	Good MMH	cOR (95%CI, Lower- Upper)	P- value	aOR 95%CI (Lower, Upper)	P-value
Chronic conditions	Yes No	3(6.7%) 42 (93.3%)	1(1.2%) 83(98.8%)	2.232 (1.204, 4.138)	0.011	4.23 (0.42, 96.39)	0.254
Sexual abuse	Yes No	2(4.4%) 43(95.6%)	0 85(100%)	2.216 (1.198, 4.098)	0.011	3.03 (0.62, 16.91)	0.175
Emotional abuse	Yes No	7 (15.6%) 38(84.4%)	3(3.5%) 82(96.5%)	2.211 (1.363, 3.585)	0.001	2.03 (1.62, 12.41)	0.012
Pregnancy rejection by community due to single motherhood	Yes No	11(24.4%) 34(75.6%)	10(11.8%) 75(88.2%)	0.595 (0.363, 0.976)	0.04	0.33 (0.12, 0.93)	0.037
Exposure to major stressors	Yes No	23(51.1%) 22(48.9%)	17(20%) 68(80%)	2.352	0.001	4.17 (1.59, 11.59)	0.004

				(1.499 3. 691)			
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cOR=crude odds ratio, aOR=adjusted odds ratio

Discussion

The WHO estimate for poor MMH status prevalence is often lower than the actual estimates by individual Countries. This study posted a prevalence of 34.7% (n=45) which was statistically significant with z statistics of 5.975, p value <0.05. This is similar to the results of studies done in Tanzania and South Africa that recorded 33.6% and 47% respectively [9, 10]. These results are a sharp contrast of the figures estimated by WHO of approximately 15.6% in LMIC [1]. Developed Countries have also reported higher prevalence of poor MMH than 10% that is estimated by WHO; for example, Brazil (19.7%), Italy (21%) and Canada (16%). On the contrary, Spain records only 4% which is below the estimates [11]. The trend indicates that the prevalence of poor MMH is likely to be higher than is estimated in most Countries if targeted screening is done.

Only 21% of women had the first ANC visit within the first trimester this mirrors a study done in US where women 28% had late diagnosis since they were screened in the third trimester [13]. Late "first ANC visit" leads to late diagnosis of poor MMH and offers no neurological protection to the baby.

The proportion of teenagers with poor MMH was the highest in the age category at 37.5%, these results resonate with a study done in the United Kingdom (UK) where younger population recorded higher EPDS scores

[12]. Similarly, a study done in Spain opined that age was generally lower in the respondents who had high EPDS scores signifying poor MMH in that population [11]. Results of these studies resonate with the fact that teenagers are highly exposed to poor MMH risk factors.

Respondents who had separated with their partners, had the highest proportion of poor MMH at 50%, which is consistent with other studies that suggest broken marriages and partnerships expose women to poor MMH [11, 13]. Those who generate income below 10000 KSh and those without any source of income had high proportion of poor MMH cases compared to those earning above 10000ksh to 30000 KSh. This mirrors results of a study done in Sweden that suggests lower economic status exposes women to poor MMH [14]. However, in the income category, 66.7% of those with income above 60000 KSh suffered poor MMH the results were not consistent with the above mentioned study and probably risk factors took a toll on the respondent coping abilities. The unemployed had high proportions poor MMH, this mirrors a study done in Asia where the unemployed were more exposed to poor MMH. The employed were cushioned from poor MMH recording the lowest positive proportion of 30.8%. The respondents with the lowest level of education had the highest mean EPDS score

which indicates that illiteracy is a risk factor to poor MMH [11].

In this study exposure to chronic illness increased the risk of developing poor MMH this mirrors results of a study done in Spain that identified physical illnesses as a risk factor to increased poor MMH [15]. Illness during pregnancy affects a women ability to cope with the demands of daily living leading to mental deterioration.

Further, the study recorded a statistically significant association between emotional and sexual abuse, and poor MMH ($p < 0.05$). This echoes a study done in Asia that reported poor MMH among respondents exposed to abuse [16]. Single women experienced pregnancy rejection by the community which is comparable to a study done in Qatar that reported poor MMH among single mothers [17]. Respondents who experience major life stressors had the highest chance of having poor MMH $aOR = 4.17$, 95% CI: 1.59–11.59, $p = 0.004$) this was similar to study done in Qatar were odds were also significantly high $aOR=2.9$, 95% CL: 1.3–6.5, $p=0.008$ [17].

Study limitations

The EPDS screening tool assesses symptoms experienced in the last seven days. This leaves out an opportunity to capture poor MMH symptoms experienced before conception and behold the 7 days period.

Mitigation measures

The study questionnaire included questions that assessed poor MMH before conception

and the period behold 7 days before the assessment day.

Conclusion

There was high prevalence of Poor MMH among pregnant women above the WHO estimates for LMIC. Specific demographic categories, for example, age and income indicated that some groups were more affected than others. Some risk factors for example, abuse, experiencing major life stressors and pregnancy rejection significantly exposed respondents to poor MMH. This means that triggers to poor MMH are individual and that women respond differently to the same situation. A trigger to poor MMH can be easily prevented by social support and timely diagnosis and management.

Recommendation

There is need to integrate MMH management in ANC services by the ministry of health in Kenya. Creating awareness about MMH and providing women with screening and diagnostic opportunities will normalize the condition and improve help seeking behaviors. Moreover, educating women on evidence based non-pharmacological intervention modalities will give them the confidence to implement and revert impending cases poor MMH.

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Conflict of interest

The authors declare no conflict of interest.

Author CRediT classification

J. M. Raiji- Idea conceptualisation, conduction of the research and funding.

G. Mbuthia- Supervision and methodology.

R. K. Kithuci- Supervision, review and editing.

C. S. Mutunga-Mwenda-Idea conceptualisation, supervision and review.

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