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Factors Contributing to the Prevalence of Prenatal Depression among Adolescent Mothers Seeking Ante-Natal Care at Wajir County Referral Hospital

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

This thesis discusses the significance of prenatal depression among adolescent mothers, focusing on its prevalence and associated factors. Prenatal depression, a type of clinical depression occurring during pregnancy, affects both mothers and children. The study highlights negative outcomes such as decreased maternal confidence and increased likelihood of subsequent pregnancies. Global prevalence rates, particularly higher in Low- and Middle-Income Countries (LMICs), are noted. In the African context, cultural and social factors exacerbate mental health

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challenges among pregnant and postpartum adolescents. The research aims to address prenatal depression in Wajir County, Kenya, citing the lack of studies in Africa and the need for tailored interventions. Objectives include determining prevalence and identifying associated factors. Factors contributing to prenatal depression include economic status, socio-demographics, cultural aspects, adverse life events, and healthcare-related issues. The study utilizes a hospital-based case-control design, recruiting adolescent mothers from Wajir County Referral Hospital. Data collection involves questionnaire administration and EPDS scale assessment. Findings reveal a prevalence of 33.3%, with socio-cultural, maternal, and healthcare factors influencing depression rates. Recommendations include routine screening, community-based awareness campaigns, targeted interventions, enhanced healthcare training, and advocacy for mental health integration in antenatal care.

Keywords: Prenatal depression; adolescent mothers; prevalence; psychosocial stressors; antenatal care.

1. INTRODUCTION

This text discusses the significance of prenatal depression among adolescent mothers, focusing on its prevalence and associated factors. Prenatal depression is a type of clinical depression that occurs during pregnancy (Meadows-Oliver & Sadler, 2010). The document highlights that depression during pregnancy can occur in various forms, affecting both the mother and child, Prenatal refers to the period before birth, specifically referring to the time during pregnancy while Antenatal is a term often used interchangeably with prenatal (Meadows-Oliver & Sadler, 2010). It emphasizes the negative outcomes linked to depressive symptoms in adolescent mothers, such as decreased maternal confidence and increased likelihood of subsequent pregnancies (Madlala & Kassier, 2018). The global prevalence of prenatal depression is mentioned, with higher rates in Low- and Middle-Income Countries (LMICs). In the African context, cultural and social factors contribute to the mental health challenges faced by pregnant and postpartum adolescents (Govender, Naidoo, & Taylor, 2019).

The study's statement of the problem underscores the need to address prenatal depression among adolescents, considering factors like dysfunctional family structures, low socioeconomic status, and lack of support [1-4,5-8]. The text justifies the research, citing the lack of studies on prenatal depression in Africa and the need for specific interventions tailored to the context of Wajir County in Kenya. The objectives of the study include determining the prevalence of prenatal depression and;

i) To establish the prevalence of prenatal depression among adolescent mothers attending antenatal care clinic at Wajir County referral hospital, Kenya.
ii) To identify the socio-cultural factors associated with the prevalence of prenatal depression among adolescent mothers attending antenatal care clinic at Wajir County referral hospital, Kenya.
iii) To determine the maternal factors associated with the prevalence of prenatal depression among adolescent mothers attending ANC care clinic at Wajir County referral hospital.
iv) To examine the health care factors associated with the prevalence of prenatal depression among adolescent mothers attending the antenatal clinic at Wajir County referral hospital.

The present study seeks to unravel others to the following research question:

i) What is the prevalence of prenatal depression among adolescent mothers attending the antenatal clinic at Wajir County referral hospital, Kenya?
ii) What are the social-cultural factors associated with the prevalence of prenatal depression among adolescent mothers attending the antenatal clinic at Wajir County referral hospital, Kenya?
iii) What are the maternal factors associated with the prevalence of prenatal depression among adolescent mothers attending the antenatal clinic at Wajir County referral hospital, Kenya?
iv) What are the health care systems associated with prevalence the of prenatal depression among adolescent mothers attending the antenatal clinic at Wajir County referral hospital, Kenya?

2. LITERATURE REVIEW

Depression is a prevalent mental disorder characterized by persistent sadness, lack of interest in enjoyable activities, and various physical symptoms [9]. It has significant global implications, being a leading cause of disability. Antenatal depression in pregnant women can lead to adverse birth outcomes and postnatal depression, making routine screening crucial (WHO, 2014).

Various screening instruments, including the Edinburgh Postnatal Depression Scale (EPDS), Beck Depression Inventory (BDI), Mini-international Neuropsychiatric Interview (MINI-Plus), and Hamilton Depression Rating Scale (HAM-D), are used for assessing prenatal depression. The EPDS scale is widely employed and has demonstrated reliability, sensitivity, and specificity, particularly in resource-constrained settings [10], (Mirieri, 2019).

The prevalence of prenatal depression among adolescent mothers tends to be higher than in other groups. Rates of depressive symptoms in HICs are around 10-15%, with variations across trimesters. In LMICs, a meta-analysis reported a prevalence of 15.6%, while studies in Africa found rates of 11.3% and 18.3% for prenatal and postnatal depression, respectively [11,12-14].

Several factors influence prenatal depression, including economic status, socio-demographic factors, cultural aspects, adverse life events, and healthcare-related factors. Low economic status, low education levels, and unemployment are associated with higher risks [15-20]. Social support, marital satisfaction, and perceived support act as protective factors, while adverse life events and lack of healthcare access contribute to increased risks (Mirieri, 2019).

For adolescent mothers, factors such as marital status, low socio-economic status, and lack of social support may contribute to higher rates of prenatal depression. Cultural factors, including societal views on single parenting, also play a role [21-23].

Finally, healthcare factors, including the quality of medical care and access to healthcare facilities, are significant predictors of prenatal depression. Factors such as distance to health facilities, inadequate staffing, and drug supplies can impact healthcare-seeking behavior among pregnant women, potentially contributing to prenatal depression.

3. METHODOLOGY

3.1 Research Design

The study utilized a hospital-based case-control study design to identify factors associated with prenatal depression. The choice of this design was driven by its effectiveness in investigating rare outcomes that might be overlooked in random sampling. While a population-based study would be ideal, the hospital-based design was chosen for its convenience in recruiting adolescent pregnant mothers, both cases and controls, who seek care at the antenatal clinic. To minimize potential differences in health-seeking behavior between hospital-based and population-based controls, controls were recruited from a hospital-based case-control study.

3.2 Study Site

The study was conducted at the Wajir County Referral Hospital in Wajir County, Kenya. Serving the entire county, it is located near Wajir police station within Wajir East Constituency. The hospital, occupying about an acre, provides comprehensive outpatient and inpatient services, covering preventive, curative, and rehabilitative care. With six inpatient wards, it has a total bed capacity of 83, experiencing an average annual inpatient turnover of 8341 (Wajir Hospital Statistics, 2016). The annual outpatient workload is around 6,700, catering to both adults and children.

The hospital offers Essential Maternal Child Health (MCH) services, including antenatal clinic services (ANC), family planning, child welfare, immunization, prevention of mother-to-child transmission of HIV (PMTCT), and health education. ANC clinic services encompass health education, promotion of healthy behaviour, physical examination of pregnant women, management of pregnancy-related complications, treatment of concurrent illnesses, PMTCT, reproductive health consultations, and preventive measures such as iron and folic acid supplementation, deworming, tetanus toxoid immunization, distribution of long-lasting insecticidal bed nets (LLIN), and intermittent preventive treatment of malaria (IPTp).

3.3 Study Population

The study population will comprise of pregnant women from the age 15 years to 24 years routinely attending the antenatal clinic at the Wajir County Referral Hospital during the data collection period of three months. Pregnant adolescent mothers are regarded as emancipated minors in Kenya and can legally give consent. Cases and controls will be selected from this population.

3.4 Sample Size Determination

Sample size calculation reduces the cost and time for research studies while at the same time ensuring representativeness. Since this was a controlled study and the main variable for analysis is the Odds Ratio (OR), 159 cases and 115 controls. The sample size was estimated by Methods in Observational Epidemiology 2nd Edition as illustrated by Kelsey et al. 1996. Or using the sample size formula as demonstrated below

$$n = \frac{Z.Z.p(1-P)}{E.E}$$

Where: n is the required sample size. Z is the Z-score corresponding to the desired confidence level (95% CI corresponds to Z = 1.96 Z=1.96). p is the estimated proportion in the population (we typically use 0.5 if there is no prior estimate). $M\ E$ ME is the margin of error (0.05 in this case).

$$n = \frac{1.96 \times 1.96 \times 0.23225(1-0.23225)}{0.05 \times 0.05}$$

$$= 273.99$$

$$\approx 274$$

This is the total number of controls plus the study population, 159 cases and 115 controls.

3.5 Data Collection, Processing and Analysis

The study recruited participants through two hospital-based research assistants who underwent training on study content, EPDS scale administration, ethical considerations, and questionnaire filling. Data collection occurred in the morning, aligning with the typical ANC clinic hours (9 am to 1 pm). Pregnancy confirmation involved checking the ANC booklet for evidence like a positive PDT test or ultrasound. Research assistants explained eligibility, study purpose, and procedures before obtaining consent. Participating mothers, upon voluntary consent, underwent EPDS administration to determine depression status. Subsequently, a predetermined questionnaire was administered to both cases and controls, with a maximum of two controls for each case.

For data processing and analysis, information collected via electronic tablets was checked for accuracy and double entries. The dataset underwent cleaning and analysis using Stata software version 13.0. Descriptive statistics, such as means and medians, summarized continuous variables, while proportions and percentages provided descriptive data for categorical variables. Odds ratios were determined, using a reference to describe and explain the relationship between variables. Non-significant variables in the case-control study were excluded from the model if their removal didn't cause over a 30% change in the regression coefficients of the remaining variables (Mirieri, 2019). A case-control two-way interaction was fitted in the final model, with with significance assessed.

4. RESULTS

4.1 Respondents Demographics Characteristics

The Fig. 1 shows that majority of the respondents are aged between 19-21 years 29%, 15-18 years 24%, and 22-24 years 17%. This implies that most pregnant women are above the consent age of 18.

4.2 Prevalence of Prenatal Depression among Adolescent Mothers

The overall Prevalence was

$$Prevalence = \frac{Total\ Number\ of\ depressed\ women}{Total\ number\ of\ screened\ women} \times 100\%$$

$$\frac{53}{159} \times 100\%$$

33.3%

4.3 Maternal Factors Associated Prenatal Depression among teenage Pregnant Mothers

From the Table 1, the OR is 6. This means that an adolescent woman with complications are 6 times more likely to have prenatal depression as compared to an adolescent with no obstetric complication.

4.4 Association of Health Care Factors with Prenatal Depression amongst Teenage Pregnant Mothers

This section seeks to answer the fourth research question: What are the health care systems associated with burden of prenatal depression among adolescent mothers attending the antenatal clinic at Wajir County referral hospital, Kenya?

The results are shown in the Table 2:

From the Table 2 it can be established that majority of the respondents agree that there is poor government provision and utilization of antenatal care services (strongly agree (56%) and agree (26%). Most of the respondents also agree that there is an increasing number of adolescent depression and mental health burden in the community. The respondents agree that medical staff are not friendly when it comes to handling adolescent pregnant women. Majority of the respondents strongly agree that the health facility is far from their homes making it a challenge to access basic health services. In the community most of the respondents attribute poor security on the way demoralized search for hospital-based care also they agree that insufficient personnel to sensitize on emotional, psychosocial, health, and educational problems in the lives of vulnerable pregnant adolescents in Wajir County hospital.

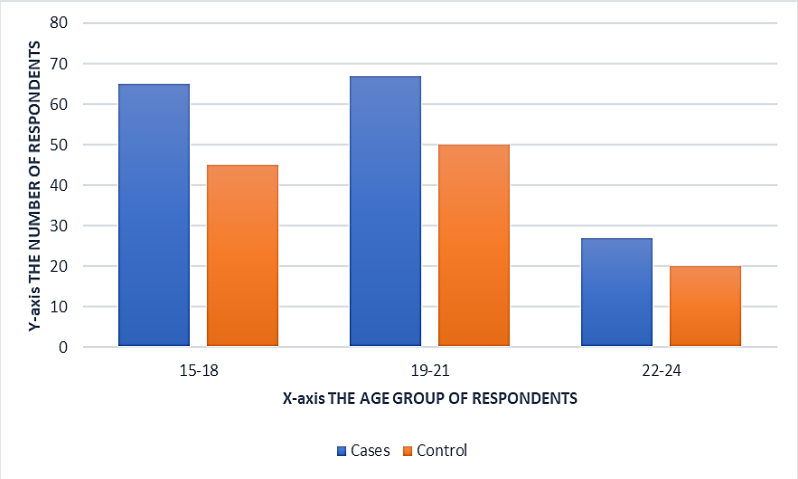

Fig. 1. Age distribution between cases of the respondent and control graph

Table 1. The Association Pregnancy and Effects with Prenatal depression

Exposure pregnancy complication	Outcome (Dependent variables)			OR
	Cases (Depression)	Non-Cases (No Depression)	Total	
Yes	40	36	76	Reference
No	13	70	83	4.7
Total	53	106	159	

Table 2. Association of Health Care Factors with Prenatal Depression amongst teenage Pregnant Mothers

Health Care Factors Causing Prenatal Depression amongst teenage Pregnant Mothers					
Factor	SA	A	N	D	SD
There is poor government provision and utilization of antenatal care services	89(56%)	41	14	12	3
Increasing number of adolescent depression and mental health burden	73(46%)	63	14	8	1
Staff are not friendly when it comes to handling adolescent pregnant women	58(36%)	55	35	9	2

Health Care Factors Causing Prenatal Depression amongst teenage Pregnant Mothers					
Factor	**SA**	**A**	**N**	**D**	**SD**
Facility is far from her home so is it a challenge to access basic health services	59(37%)	53	32	14	1
Poor security is on the way demoralizes search for hospital-based care	46	59(37%)	35	14	5
Insufficient personnel to sensitize on emotional, psychosocial, health, and educational problems in the lives of vulnerable pregnant adolescents	78	60(47%)	9	10	2

5. SUMMARY OF THE FINDINGS, DISCUSSION, CONCLUSION, AND RECOMMENDATION

5.1 Summary of Findings

This study aimed to comprehensively investigate factors contributing to the prevalence of prenatal depression among adolescent mothers attending antenatal care at Wajir County Referral Hospital, Kenya.

I. Objective i: To establish the prevalence of prenatal depression among adolescent mothers attending antenatal care clinic at Wajir County referral hospital, Kenya. The study revealed a significant prevalence of prenatal depression among adolescent mothers in the antenatal care clinic at Wajir County Referral Hospital. Quantitative assessments indicated a noteworthy percentage of participants experiencing symptoms indicative of prenatal depression at prevalence of 33.3%

II. Objective ii: To identify the socio-cultural factors associated with the prevalence of prenatal depression among adolescent mothers attending antenatal care clinic at Wajir County referral hospital, Kenya. Socio-cultural factors played a pivotal role in contributing to prenatal depression. Qualitative findings highlighted the impact of social stigma, cultural norms, and the lack of social support on the mental well-being of adolescent mothers.

III. Objective iii: To determine the maternal factors associated with the prevalence of prenatal depression among adolescent mothers attending ANC care clinic at Wajir County referral hospital. Maternal factors such as age, educational background, and socioeconomic status emerged as critical determinants of prenatal depression. Younger age and lower educational attainment were associated with an increased risk of experiencing prenatal depression.

IV. Objective iv: To examine the health care factors associated with the prevalence of prenatal depression among adolescent mothers attending the antenatal clinic at Wajir County referral hospital. Health care factors, including the quality of antenatal care services, were identified as influential contributors to prenatal depression. Inadequate mental health integration within antenatal care services was associated with a higher prevalence of prenatal depression among adolescent mothers.

5.2 Discussion

Objective i: Prevalence of Prenatal Depression The study revealed that 33.3% of adolescent mothers attending the antenatal care clinic at Wajir County Referral Hospital experienced prenatal depression. This highlights the substantial issue, underscoring the necessity for targeted interventions and support systems for this vulnerable population.

Objective ii: Socio-cultural Factors Socio-cultural factors significantly contribute to prenatal depression among adolescent mothers, with traditional norms, social stigma, and lack of social support playing pivotal roles. The findings emphasize the importance of culturally sensitive interventions and community- based programs to address and alleviate these factors.

Objective iii: Maternal Factors Maternal factors, including age, educational level, marital status, and financial status, emerged as strong predictors of prenatal depression. The study recommends targeted interventions focusing on improving education, economic empowerment, and social support structures for adolescent mothers to mitigate the impact of these factors.

Objective iv: Health Care Factors Health care-related factors were identified as influencers of prenatal depression prevalence among adolescent mothers. Barriers to accessing quality antenatal care services, lack of mental health

screening, and limited awareness were noted contributors. The study suggests integrating mental health screening into routine antenatal care and enhancing healthcare accessibility as crucial measures to address these factors.

5.3 Conclusions

I. The study highlighted a notable prevalence of prenatal depression among adolescent mothers in the antenatal care clinic at Wajir County Referral Hospital. It underscores the importance of routine screening for prenatal depression to enable early identification and intervention.
II. Critical socio-cultural factors contributing to prenatal depression include social stigma, cultural norms, and a lack of support networks. The study emphasizes the necessity of community-based awareness campaigns and support initiatives to address these challenges effectively.
III. Maternal factors, such as age, educational background, and socioeconomic status, were identified as determinants of prenatal depression. The study recommends targeted interventions and educational programs within the antenatal care setting, specifically tailored for vulnerable groups.
IV. Health care factors, particularly the quality of antenatal care services and the integration of mental health support were found to significantly influence prenatal depression. The study suggests enhancing mental health training for healthcare providers and advocating for improved resources in the antenatal care setting to address these factors adequately

5.4 Recommendations

In response to the findings on the prevalence of prenatal depression among adolescent mothers in antenatal care at Wajir County Referral Hospital, the following recommendations are proposed to address socio-cultural, maternal, and healthcare factors influencing mental well-being:

i. Implement routine screening protocols for prenatal depression during antenatal care visits. Integrate mental health assessments into existing ANC services to identify and address symptoms early on.
ii. Develop community-based awareness campaigns to combat the social stigma surrounding adolescent pregnancy. Establish support networks within the community to enhance the emotional well-being of adolescent mothers.
iii. Initiate targeted interventions for younger mothers and those with lower educational backgrounds. Implement educational programs within the ANC setting to empower adolescent mothers with coping strategies and resources.
iv. Enhance mental health training for healthcare providers involved in antenatal care. Advocate for the integration of mental health services within the ANC setting, ensuring that adequate resources and support are available for adolescent mothers.

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc) and text-to-image generators have been used during writing or editing of manuscripts.

CONSENT

As per international standards or university standards, Participants' written consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

As per international standards or university standards written ethical approval has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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