AUCTORES
Globalize your Research

Journal of Obstetrics Gynecology and Reproductive Sciences
Woynhareg Kassa Tiruneh *

Open Access

Research Article

Perceived Stress and Associated Factors Among Pregnant Adolescent Came for Antenatal Care in Public Hospitals of South Gondar Zone, Northwest, Ethiopia. Institution based cross-sectional study design 2023

Thomas Kenaw Ayal [1], Alehegn Bishaw Geremewu [2], Woynhareg Kassa Tiruneh[1]*

[1]Department of Reproductive health, College of Medicine and Health Sciences University of Gondar, Gondar, Ethiopia.

[2]University of Gondar College of Medicine and Health Science Institute of Public Health Department of Reproductive Health.

***Corresponding Author:** Woynhareg Kassa Tiruneh, Department of Reproductive health, College of Medicine and Health Sciences University of Gondar, Gondar, Ethiopia

Received date: May 21, 2024; **Accepted date:** May 31, 2024; **Published date:** June 12, 2024.

Citation: Thomas K. Ayal, Alehegn B. Geremewu, Woynhareg K. Tiruneh, (2024), Perceived Stress and Associated Factors Among Pregnant Adolescent Came for Antenatal Care in Public Hospitals of South Gondar Zone, Northwest, Ethiopia. Institution based cross-sectional study design 2023, *J. Obstetrics Gynecology and Reproductive Sciences*, 8(4) **DOI:**10.31579/2578-8965/222

Abstract:

Background: Perceived stress during pregnancy is associated with adverse obstetric outcomes especially being adolescent. Adolescents display harmful emotional responses towards pregnancy, presenting higher school dropout rates, social punishment, and segregation. Stress is the most frequently encountered reactions toward an unexpected pregnancy in adolescents. Antenatal perceived stress is still unaware and under-diagnosed during routine antenatal care. However, no adequate studies performed on perceived stress and its risk factors among pregnant adolescent women in developing countries including Ethiopia specifically at the study area.

Objective: To assess the prevalence of perceived stress and associated factors among pregnant adolescent came for antenatal care in public hospitals of south Gondar zone, Northwest, Ethiopia, 2023.

Materials and Methods: This an institution-based cross-sectional study was conducted from April 03 – May 20, 2023, among 415 pregnant adolescent women attending antenatal care in public hospitals of south Gondar zone. The participants were interviewed using a structured questionnaire which included demographic data, obstetric data, serious life event data, and English language version of the 10-item Perceived Stress Scale (T-PSS-10) to assess perceived stress symptoms. The data was coded and entered to Epi data 3.1 and was exported to Stata14 for analysis. Both bivariable and multivariable logistic regression were fitted to identify factors associated with perceived stress. In multivariable logistic regression variables with P-value<0.05 with 95% CI were considered independently associated factors for the outcome variable.

Results: Of a total 415 pregnant adolescents, theprevalence of perceived stress symptoms in antenatal pregnant adolescent was 18.07% (95% CI; 14.35- 21.78%). Perceived stress symptoms were significantly associated with Partner rejection of pregnancy (AOR= 5.99, 95% CI; 1.44- 24.92), first trimester of pregnancy (AOR= 5.18, 95% CI; 1.37- 19.58), unplanned pregnancy (AOR= 2.14, 95% CI; 1.10– 4.17), multiple roles at home (AOR= 1.90, 95%CI=1.03-3.48), prenatal depression (AOR=2.14, 95%CI=1.08-4.24) and poor social support (AOR=8.33, 95%CI=1.01-68.43).

Conclusion: The prevalence of perceived stress among pregnant adolescent was relatively high. Partner acceptance of pregnancy, gestational age, and status of pregnancy, multiple roles at home, depression and social support were associated with perceived stress. This study recommended that all pregnant adolescent women should be screened and treated for perceived stress, particularly during the first trimesters and mothers with depression.

Keywords: perceived stress; pregnant adolescent; Gondar; ethiopia

Introduction

Adolescence is a time of physical changes, psychological maturation, and face many challenges and stressful situations related to educational commitment, social behavior, sexual development, familial conflicts, economical problems, and substance abuse which accurately modulate personality and individual behavior (1). Pregnancy along with adolescent period itself creates very stressful events in women's life that needs enormous psychological adjustment. Pregnancies among adolescents are considered as a complication, as they favor education interruption, poor present and future health, higher rates of poverty, problems for present and future children, among other negative outcomes (2).Poor mental health can have significant effects on the health and development of adolescents and is associated with various adverse social and economic consequence (3). Adolescents display emotional responses toward pregnancy, presenting higher school dropout rates, social punishment, and segregation (4). Stress is among the most frequently encountered reactions toward pregnancy in adolescents (5).

Studies suggested that stress is most common cause for physical and psychological health problem of pregnant women during their time of pregnancy (6). Stress during pregnancy does not only have undesirable effects on the progression of pregnancy, they have impact negative outcome for both mother and child. However, among teenagers, the effects can be particularly heightened and have more deleterious impact. It has been documented that perinatal stress is more prevalent among pregnant women mothers who are adolescents than older age (7).

Stress in adolescent pregnant women is associated with the risk of gestational hypertension, and undesirable health which lead to infant mortality, cerebral palsy, vision and hearing impairments (8,9).

Previous research findings showed that common stressors among pregnant adolescents includes young maternal age, literacy level, being single, chronic medical health problems, unemployed, loneliness, urban living, experience of sexual and psychological violence, perceived insufficient social support, experience of vaginal bleeding during current pregnancy, lack of parental involvement in care, male partner's rejection of pregnancy, having multiple roles at home, unwanted pregnancy, separation from spouse, marital conflict, fear of losing her baby, familial conflict and death of close relatives (10-15) . To our knowledge no review of the literature has reported the prevalence and associated factors of perceived stress among pregnant adolescent women in developing countries including Ethiopia specifically at the study area. Therefore, the aim of this study fills the gap in knowledge of antenatal perceived stress in this setting. Our study aims to explore the prevalence and associated factors of perceived stress among pregnant adolescent women at public hospitals of South Gondar zone, Ethiopia. Understanding antenatal perceived stress is important for institutions in order to create strategies and guidelines for treating maternal stress. The results of this study provide further information for management of maternal perceived stress to prevent adverse maternal and neonatal outcomes especially among adolescents.

Methods and materials

Study design and setting

An institutional based cross sectional study was conducted at public hospitals of south Gondar zone, Northwest, Ethiopia, from April 03 – May 20, 2023, among pregnant adolescent came for antenatal care. South Gondar is one of the 11 zonal districts of the Amhara regional state, Northwest Ethiopia. Debretabor is the capital city of south Gondar administrative zone, which is found 103 km away from Bahir Dar; the capital city of Amhara regional state, and about 666 km away from Addis Ababa (the capital city of Ethiopia).

Population of the study

All pregnant adolescents attended antenatal care in public hospitals of south Gondar zone were considered as a source population of the study whereas all pregnant adolescents attended antenatal care in public hospitals of south Gondar zone available during the data collection period were considered as the study population of the study. Pregnant women who had known sever psychiatric illnesses which might affect the stress status of women were excluded.

Sample size determination

The sample size was calculated with a single population proportion formula considering the following assumptions: 95% confidence interval (CI), 50% population proportion since no study conducted in the study area on the prevalence of perceived stress among pregnant adolescent women, and use 5% marginal error. Therefore, by using single proportion formula: By considering a 10% non-response rate, the final sample size was 422

Sampling procedure

There were 8 public hospitals in south Gondar zone and all these hospitals were included in the study by proportional allocation .In south Gondar zone public hospitals there are a total of 852 pregnant adolescents from the following hospitals, such as Debre Tabor Comprehensive Specialized Hospital (121), Addis Zemen Primary Hospital (113), Nefas Mewucha Primary Hospital (107), Ebinat Primary Hospital (93), Dr. Ambachew Memorial Primary Hospital (99), Andabet Primary Hospital (107), Mekane Eyesus Primary Hospital (119) and Wogeda Primary Hospital (93) in respective manner. Finally, the study subjects were selected by using systematic random sampling technique

Variables of the study and measurement

Dependent variable

Perceived stress (Yes, No)

Independent variables of the study

Socio-demographic related factors: - Age, educational status, employment, marital status, religion, residence, income status, partner acceptance of pregnancy.

Obstetric and medical related factors: -Gestational age, chronic medical problems before pregnancy, status of pregnancy, vaginal bleeding during current pregnancy, ANC initiation, pregnancy related disease, counseled danger signs.

Psychosocial related factors: - Social support, violence, multiple roles at home, fear of losing baby, feeling of shame, depression, partner involvement in care.

Perceived stress was measured using the Perceived Stress Scale 10(PSS-10). The questions in this scale were asked about feelings and thoughts in the last month. PSS was measured on 10 items with a 4-point Likert- scale ranging from 0 = Never, 1 = Almost never, 2 = Sometimes, 3 = Fairly often, 4 = Very often). The total score ranges between 0 and 40. A cutoff point of ≥ 20 were considered encountering stress (16).

Depression was measured using beck's depression inventory 21 item tool. Participants could obtain a cumulative score of a minimum of 0 to a maximum of 63. Scores 0–13 were indicated minimal depression, scores 14–19 was indicate mild depression, scores 20–28 indicate moderate depression, and scores 29–63 indicate severe depression (17).

Intimate partner violence during pregnancy (IPVP) was measured using a standardized tool developed by WHO {Monk, 2020 #38}. women who replied "yes" to at least one of the 13 questions related to sexual, psychological, and physical violence were coded as "having experienced IPVP, whereas women who answered "no" to all of the questions were coded as not exposed to IPVP (18,19).

Social support was measured using a 3-item questionnaire to determine the status of social support, which was assessed by using the Oslo Social Support Scale validated tool. The Oslo 3-item Social Support Scale has a sum score scale ranging from 3 to 14 with three broad categories: 'poor social support' (3–8), 'moderate social support' (9–11) and 'strong social support' (12–14) (20).

Wealth status was determined based on the wealth index calculation. Wealth index is a composite measure of a household's cumulative living standard. Wealth index was calculated by listing household ownership of selected assets, such as televisions and bicycles, materials used for housing construction, and types of water access and sanitation facilities. There are five categories of wealth index, such as "the poorest", "poorer", "middle", "richer", and "the richest (21).

Pregnant adolescent: A woman considered as adolescent pregnancy if her age was from 10 to 19 years (22).

Data collectors and procedures

Eight experienced BSc midwifes were recruited for data collection. Besides two MSc midwives were recruited for supervisors. Theoretical and practical training was given for the data collectors and supervisors for one day. The tool was pretested on 21 pregnant adolescents at Woreta health center two weeks before the actual data collection. Supervisors were kept in touch with the data collectors to regularly check the data collection procedure. Finally, the data collectors give the completed data forms weekly to the investigator.

Data quality control

A structured interviewer-administered questionnaire was prepared in English and translated into Amharic and vice versa to ensure its consistency. The training was given to data collectors and supervisors about how to collect data and brief on each question included in the tool. Moreover, a pretest was done to ensure the clarity of the tool. Supervisors were checked on the spot and review all the questionnaires to ensure completeness of the forms. Furthermore, the investigators were kept in touch with the supervisors to regularly check the sent files from each data collector.

Data management and analysis

After the data checked for its completeness, it was entered into Epi data 3.1 and exported to Stata 14 for cleaning, coding and analysis. Descriptive statistical analyses such as simple frequencies, mean and standard deviation were used to describe the characteristics of participants. Binary logistics regression (bi variable and multivariable) was fitted to identify factors associated with perceived stress. To control confounding factors; variables with a p-value of ≤ 0.25 in the bivariable analysis, significant in previous studies and biological plausibility were taken for the multivariable analysis. Standard error and Hosmer-Lemeshow tests were used to check multi - collinearity and the model goodness of fit respectively. Adjusted odds ratio (AOR) with 95% confidence interval (CI) was used to identify factors associated with perceived stress. The level of statistical significance was set at a p-value < 0.05.

Ethical considerations

Ethical clearance was obtained from ethical review committee of University of Gondar, college of medicine and health science, Institute of Public Health. Written permission was obtained from south Gondar public hospitals. The purpose and objectives of the study was informed; oral consent was obtained from each study participant. Participants were informed as participation is on a voluntary basis. The data collection procedure was anonymous for keeping the confidentiality of any information.

Results

Socio demographic characteristics of participants

Among the total of 415 study participants participated in the study with a response rate of 98.3. The mean age of participants was 18.6 years. Among study participants almost two thirds (72.53%) of them were married, most of the participant was (71.33 %) of them were Orthodox, almost half percent (48.07 %) of them had no formal education, more than two-thirds (79.52%) were lived in rural and 220 (53.01%) were currently housewife. About 400 of the participate partner accept their pregnancy (Table 1).

Variable	Category	Frequency(n)	Percent (%)
Age	Mean(SD)= 18.60±0.72		
Marital status	Single	92	22.17%
	Married	301	72.53 %
	Divorced	22	5.30 %
Religion	Orthodox	296	71.33 %
	Muslim	111	26.75 %
	Protestant	8	1.93%
Education	No formal education	199	48.07 %
	Primary school	193	46.62 %
	Secondary school	16	3.86%
	Collage and above	6	1.45%
Residence	Urban	85	20.48 %
	Rural	330	79.52 %
Employement	Housewife	220	53.01 %
	Merchant	149	35.90%
	Private work	27	6.51 %
	Others	19	4.58 %
	Poorest	83	20.00 %

Wealth index status	Poorer	86	20.72 %
	Middle	82	19.76 %
	Richer	83	20.00 %
	Richest	81	19.52%
Parental acceptance of pregnancy	Yes	400	96.39%
	No	15	3.61%

Table 1: Socio-demographic characteristics of adolescent pregnant attending ANC in South Gondar public Hospitals, Northwest Ethiopia, 2023(n=415)

Obstetric & medical related factors

About 272 (65.54 %) of the mother's initiate antenatal care follow up after 16 weeks of gestation and 217(47.71 %) of pregnancies were planned. During current pregnancy or previous pregnancy, 310 (52.29%) of the study subjects reported that they don't face any type of complication. Among the participants 308 (74.22 %) of them said they were not counseled on danger signs of pregnancy (Table 2).

Variable	Category	Frequency(n)	Percent (%)
Time of ANC initiation	Before 16 weeks	143	34.46%
	After 16 weeks	272	65.54 %
Gestational age	First trimester	143	34.46 %
	Second trimester	242	58.31 %
	Third trimester	30	7.23 %
Status of pregnancy	Planned	198	47.71 %
	Unplanned	217	52.29%
Counseled about danger signs	Yes	107	25.78 %
	No	308	74.22 %
Pregnancy related disease	Yes	86	20.72 %
	No	329	79.28%
Medical disease due to pregnancy	Yes	29	6.99 %
	No	386	93.01 %

Table 2: Obstetrics and medical related characteristics of adolescent pregnant attending ANC in South Gondar public Hospitals, Northwest Ethiopia, 2023(n=415)

Psychosocial related factors

Regarding the maternal social support scale from total adolescent pregnant mothers participated in this study 318 (76.63 %) of them has poor social support. Among the total adolescent pregnant participated in this study 291 (70.12 %) of them said they have no concern towards their husband worries. Majority 301 (72.53 %) of mothers have faced family conflict at their pregnancy period. Most 272 (65.54 %) of the mothers were not emotionally or physically abused by their partner or someone important to them.

About 240 (57.83 %) of the study participants had depression (Table3).

Variable	Category	Frequency(n)	Percent (%)
Social support	Poor	318	76.63 %
	Moderate	69	16.63 %
	Strong	28	6.75 %
Concern towards husband worries	Yes	124	29.88%
	No	291	70.12 %
Fear of losing baby	Yes	141	33.98 %
	No	274	66.02 %
Abuse	Yes	143	34.46 %
	No	272	65.54 %
Depression	Yes	240	57.83 %
	No	175	42.17 %

Table 3: Psychosocial related characteristics of adolescent pregnant attending ANC in South Gondar public Hospitals, Northwest Ethiopia, 2023(n=415)

Prevalence of Perceived stress

The mean value of perceived stress among pregnant adolescent was 17.51 ± 5.89. Overall, the prevalence of perceived stress among pregnant adolescent attending antenatal care unit of South Gondar public hospitals was 18.07% (95% CI; 14.35- 21.78%)

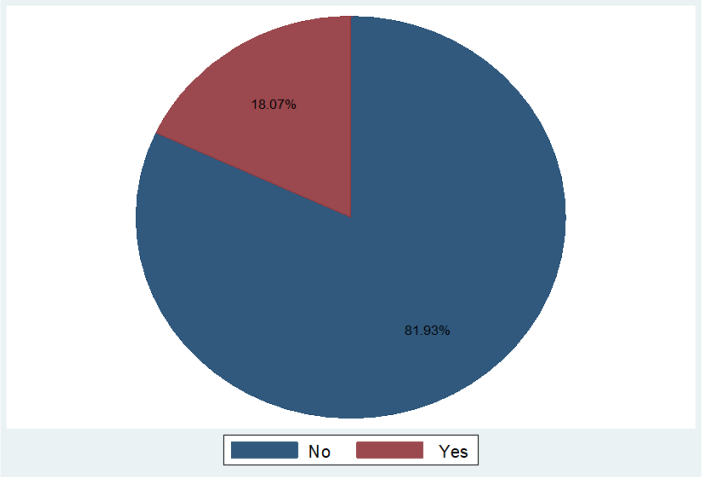

Figure1: Perceived stress scale among adolescent pregnant attending antenatal care units of South Gondar public hospitals Northwest, Ethiopia 2023(n=415)

Factors associated with perceived stress among adolescent pregnant

In the bivariable analysis the religion, the employment status, the partner acceptance of pregnancy, the time of ANC initiation, the gestational age, the status of pregnancy, the feeling of shame, the concern towards husband worries, the multiple roles at home, the depression and social support were variables that had a p-value of <0.25

In the multivariable analysis partner acceptance of pregnancy, gestational age, pregnancy status multiple roles at home, prenatal depression and poor social support were associated with perceived stress among pregnantadolescent women in South Gondar Zone at a p-value of <0.05(Table 4)

Variables	Perceived stress		COR (95%CI)	AOR (95%,CI)	PValue
	Yes	No			
Partner acceptance of pregnancy					
Yes	67	333	1	1	
No	8	7	5.68(1.99-16.19)	5.99(1.44,24.92)*	0.014
Gestational age					
First trimester	47	96	3.18 (1.04-9.64)	5.18(1.37-19.58)*	0.015
Second trimester	24	218	0.71(0.23-2.22)	1.10 (0.28-4.19)	0.889
Third trimester	4	26	1	1	
Status of pregnancy					
Unplanned	54	163	2.79 (1.61-4.82)	2.14 (1.10-4.17)*	0.025
Planned	21	177	1	1	
Multiple roles at home					
Yes	40	118	2.15 (1.29-3.56)	1.90(1.03- 3.48)*	0.037
No	35	222	1	1	
Depression					
No	17	158	1	1	
Yes	58	182	2.96 (1.65-5.29)	2.14 (1.08-4.24)*	0.028
Social support					
Poor	68	250	7.34 (0.98-55.00)	8.33 (1.01-68.43)*	0.048
Moderate	6	63	2.57 (0.29-22.39)	1.93 (0.20-18.61)	0.568
Strong	1	27	1	1	

Table 4: Bivariable and multivariable logistic regression model predicting the likelihood of perceived stress among adolescent pregnant attending antenatal care unit at South Gondar public hospitals, Northwest Ethiopia, 2023 (n=415)

It was observed that pregnant adolescents whose pregnancy were rejected by their partner were 5.9 times more likely develop perceived stress than those pregnancy was accepted (AOR= 5.99, 95% CI; 1.44- 24.92).

After adjusting other variables odds of developing perceived stress were 5.18 times higher among pregnant women who initiate their antenatal care follow up before or at first trimester as compared to those initiated after second or third of pregnancy (AOR=5.18, 95% CI; 1.37-19.58)

In addition, the odds of having perceived stress among pregnant adolescent women who had unplanned pregnancy were 2.14 times higher than whose pregnancy was planned (AOR=2.14,95% CI; 1.10-4.17).

The likelihood of developing perceived stress among adolescent pregnant women those having multiple roles at home were 1.90 times higher as compared to those who had no multiple roles at home (AOR=1.90, 95% CI; 1.03-3.48).

Adolescent Pregnant who had prenatal depression were 2.14 times more likely to develop perceived stress as compared with adolescent pregnant women without prenatal depression (AOR=2.14, 95%CI=1.08-4.24).

Adolescent Pregnant who had poor social support were 8.33 times more likely to develop perceived stress as compared with adolescent pregnant with strong social support (AOR=8.33, 95%CI=1.01-68.43).

Discussion

This study indicated that the prevalence of perceived stress among pregnant adolescents was found to be 18.07% (95% CI; 14.35-21.78). The multivariable logistic regression identified partner acceptance of pregnancy, gestational age, pregnancy status multiple roles at home, prenatal depression and poor social support were associated with perceived stress among pregnant adolescent women as a factor significantly associated with perceived stress.

Based on our study results, the prevalence of perceived stress among pregnant adolescent women in South Gondar Zone was 18.07% (95% CI;14.35-21.78). This finding is higher than the study done in Canada 17.1% (23) and lower than the study done in Southern Ethiopia 23.1% (24) Whereas this study finding is higher than the study conducted in Southeast Ethiopia 11.6% (25) Northwest Ethiopia 13.7% (26) and Iran 11.5% (27). The possible reason for the difference might be due to the difference in age level study participants. The other possible reason might be, in our study, most of the pregnant women have unplanned pregnancy and the majority of them were living with low social support which could increase stress, aggravate the effects of stress and faces pregnant women from the harmful effects of stressful situations.

The finding of this study is lower than in studies conducted in Nigeria 80.5% (28) Indonesia 55.6% (29), Thailand 23.6% (12), and Turkey 72.8% (11). The possible reason for these variations might be sample size and sampling technique used in a study conducted in the above study, difference in cut-off score for the PSS (a higher cut-off score is used for this study) and characteristics of the participants and difference in culture and coping skills. The discrepancy can be also explained as due to difference in sociocultural status, study period and study setting.

Perceived pregnancy-related stress was 5.99 times higher among those whose pregnancies were rejected by their partner than those whose pregnancies were accepted. This was in line with the study conducted in Nigeria (28). This further suggests the crucial importance of social support as a positive moderating factor on the level of stress perceived or experienced by pregnant teenagers. This may also explain the significantly higher level of perceived stress reported by those whose pregnancies were accepted by their partners. This appears counter-intuitive considering the fact that parents would have been expected to be potential sources of the social support needed by these teenagers and the availability of such social support would have provided great relief (30).

Those mothers with in first trimester of pregnancy had perceived stress 5.18 times higher than mothers with in third trimester. This finding is similar with the studies conducted in Southern Ethiopia (24) and Southeast Ethiopia (25). It might be because pregnancy, particularly the first trimester, is a period of enormous biological, psychological, and social challenges for the mother and a time of making significant life changes. These changes might in turn be linked to emotional disturbances and contribute to increased perceived stress in adolescent pregnant women. It might also be due to the first trimester being associated with significantly higher levels of nausea, vomiting and fatigue. These have also been linked with higher perceived stress among pregnant women (31,32).

The likelihood of having perceived stress was about 2.14 times higher for mothers who has unplanned pregnancy as compared to those mothers whose pregnancy was planned. The finding is consistent with the studies conducted in Southern India (10) and Southern Ethiopia (24). The stress associated with unplanned pregnancy by factors relating to socioeconomic position, such as the increased financial pressures of a new child, and psychological readiness for motherhood and may have a detrimental impact on the quality of the partner relationship, increasing the risk of psychological distress (32).

Mothers who had multiple roles at home were 1.90 times more likely to develop perceived stress as compared with adolescent pregnant women who had no multiple roles. Similar finding was obtained from study conducted in Iran (13). This might be due this high stress may be due to difficulty of playing multiple roles in the family and community, or due to individual dissatisfaction with these roles.

Adolescent Pregnant women who had prenatal depression were 2.14 times more likely to develop perceived stress as compared with pregnant women without prenatal depression. This finding is consistent with the study conducted in Northwest Ethiopia (26).

Even though depression is more serious and long-lasting than stress, disease related factors like decreased coping skills, poor quality of life and decreased immunity might lead participants to further experience increased stress. It might be because depressive symptoms are associated with higher levels of maternal serum inflammatory markers during pregnancy. These inflammatory biomarkers have also been reported to have a significant contribution to the increased release of stress hormones, which in turn contributes to increased perceived stress among pregnant women (33,34).

Pregnant women who had poor social support were 8.33 times more likely to develop perceived stress as compared with pregnant women with strong social support. Social support, another identified resilience resource was a significant factor at the interpersonal level. Social support may provide positive feedback about oneself from a caring other and increase feelings of mastery with regard to the stressor. Professional and peer support can help a pregnant woman feel understood, validated, and heard. A woman's self-esteem can also be bolstered through realizing that she has something to offer others in a mutually supportive relationship (35).

The findings of this study are useful for understanding the prevalence of perceived stress among adolescent pregnant women, for identifying significant factors that raise stress levels, for raising public awareness, and for informing stakeholders. Furthermore, it can inform healthcare professionals about the importance of perceived stress screening and provide effective counseling and treatment programs to pregnant women who visit antenatal care. It will also be a resource for other researchers.

Limitation of the study

The main limitation of this study was conducted in health facilities; hence the findings might not adequately reflect the stresses of the entire pregnant women in the community.

The other limitation was social desirability bias could also be a concern. We had tried to minimize by giving training for the data collectors.

Conclusion

In this study Partner acceptance of pregnancy, gestational age, status of pregnancy, multiple roles at home, depression and poor social support were positively associated with perceived stress.

Acknowledgement

First, we would like to thank University of Gondar, College of medicine and health sciences, institute of public health, department of reproductive health that allowed us to do this research on this interesting area.

Secondly, we would like to expressour special thanks to the study participants, data collectors and supervisors Funding This research did not receive any grant from any funding agencies in the public, commercial or not-for-profit sectors.

Consent for publication

Not applicable

Conflict of interest

The authors declare that they have no potential conflict of interest.

Author's contributions

TKA was involved in the research conception and design. WKT was participated in conceptualization, Investigation, data curation and supervision. AB was participating in write up, review and editing the manuscript.

WKT was involved in methodology, and software, and handled data analysis, interpretation, and writing the original draft.

All authors read and approved the final manuscript.

Abbreviations

ANC (Antenatal Care), BMI (Body Mass Index), CI (Confidence Interval), DM (Diabetes Mellitus), IPVP (Intimate Partner Violence during Pregnancy), PHQ (Patient Health Questionnaire), PSS (Perceived Stress Scale), USA (United States of America), WHO (World Health Organization)

References

1. Braine T. (2009). Adolescent pregnancy: a culturally complex issue. World Health Organization Bulletin of the World Health Organization. 87(6):410.
2. Gavin L, MacKay A, Brown K, Harrier S, Ventura S, et al. (2002). Sexual and reproductive health of persons aged 10–24 years. United States. 2007
3. Pantha S, Hayes B, Yadav B, Sharma P, Shrestha A, et al. (2014). Prevalence of stress among pregnant women attending antenatal care in a tertiary maternity hospital in Kathmandu. *J Women's Health Care.* 3(5):183.
4. Pérez-López F, Pérez-Roncero G, López-Baena M. (2010). Current problems and controversies related to pregnant adolescents. *RevistaEcuatoriana de Ginecología y Obstetricia.* 17(2):185-192.
5. Zachariah R. (2009). Social support, life stress, and anxiety as predictors of pregnancy complications in low-income women. Research in nursing & health. 32(4):391-404.
6. Jaworska N, MacQueen G. (2015). Adolescence as a unique developmental period. *Journal of Psychiatry and Neuroscience.* 40(5):291-293.
7. Ahmed E,Alhaouf ,(2017). Stress and its predictors in pregnant women: a study in Saudi Arabia.Journal of psychology and Behaivioral management.
8. Wadhwa PD, Entringer S, Buss C, Lu MC. (2011). The contribution of maternal stress to preterm birth: issues and considerations. *Clinics in perinatology.* 38(3):351-84.
9. Wudneh Simegn LY, Abdulwase Mohammed Seid, Asmamaw Emagn Kasahun, Faisel DulaSema, Adane Flatie, et al. (2022). Perceived stress and associated factors among university students in Ethiopia during the late stage of the COVID-19 pandemic: A cross-sectional study. frontiers in psychology. 2022.
10. Vijayaselvi R, Beck MM, Abraham A, Kurian S, Regi A, et al. (2015). Risk factors for stress during antenatal period among pregnant women in tertiary care hospital of Southern India. *Journal of clinical and diagnostic research:* JCDR. 9(10): QC01.
11. Ozberk H, Mete S. (2021). Stress Level and Stressors in Women with Threatened Preterm Labor. *International Journal of Caring Sciences.* 14(3):1932.
12. Thongsomboon W, Kaewkiattikun K, Kerdcharoen N. (2020). Perceived stress and associated factors among pregnant women attending antenatal care in urban Thailand. Psychology research and behavior management. 13:1115.
13. Najjarzadeh M, Abbasalizadeh S, Mohammad-Alizadeh-Charandabi S, Asghari-Jafarabadi M, Mirghafourvand M. (2022). Perceived stress and its predictors in women with threatened preterm labour: A cross-sectional study. Nursing Open. 9(1):210-221.
14. Woods SM, Melville JL, Guo Y, Fan M-Y, Gavin A. (2010). Psychosocial stress during pregnancy. *American journal of obstetrics and gynecology.* 202(1):61. e1-. e7.
15. Boakye-Yiadom A, Shittu S, Dutt J, Dapare P, Alhassan A. Perceived stress and anxiety among Ghanaian pregnant women. Journal of Medical and Biomedical Sciences. 2015;4(2):29-37.
16. Wellings K, Jones KG, Mercer CH, Tanton C, Clifton S, et al. (2013). The prevalence of unplanned pregnancy and associated factors in Britain: findings from the third National Survey of Sexual Attitudes and Lifestyles (Natsal-3). The Lancet. 2013;382(9907):1807-1816. MengeshaSrahbzuBiresaw GMT, EngudayTirfeneh Gebeyehu. Perceived stress and associated factors among pregnant women during COVID-19 pandemic period in Northwest Ethiopia, 2020: a cross sectional study. 2022.
17. Cohen S, & Williamson. (2022). Perceived Stress Scale (PSS-10). NovoPsych.
18. Anda D, Darroch P, Davidson M, Gilly J, Javidi M, et al. (1992). Stress and Coping among Pregnant Adolescents. *Journal of Adolescent Research.* 7(1):94-109.
19. Ashenaf W MB, Egata G, Berhane Y. (2020). Prevalence and associated factors of intimate partner violence during pregnancy in eastern Ethiopia. Int *J Women's Health* 12:339.
20. Kocalevent R-D, Berg L, Beutel ME, Hinz A, Zenger M, et al. (2018). Social support in the general population: standardization of the Oslo social support scale (OSSS-3). *BMC psychology.* 6(1):1-8.
21. Wulandari RD, Laksono AD. (2020). Determinants of knowledge of pregnancy danger signs in Indonesia. PLoS One. 15(5):e0232550.
22. Worku MG, Tessema ZT, Teshale AB, Tesema GA, Yeshaw Y. (2021). Prevalence and associated factors of adolescent pregnancy (15–19 years) in East Africa: a multilevel analysis. *BMC Pregnancy and Childbirth.* 21(1):253.
23. Kingston D, Heaman M, Fell D, Dzakpasu S, Chalmers B. (2012). Factors associated with perceived stress and stressful life events in pregnant women: findings from the Canadian Maternity Experiences Survey. *Maternal and child health journal.* 16:158-168.
24. Bane AD, Madebo WE, Endashaw G, Bezabih WA, Workie KB, et al. (2020). Assessment of perceived stress and associated

factors among pregnant women attending antenatal care at Arba Minch town governmental health institutions, southern Ethiopia,
25. Engidaw NA, Mekonnen AG, Amogne FK. (2019). Perceived stress and its associated factors among pregnant women in Bale zone Hospitals, Southeast Ethiopia: a cross-sectional study. BMC research notes. 12:1-6.
26. Biresaw MS, Takelle GM, Gebeyehu ET. (2022). Perceived stress and associated factors among pregnant women during COVID-19 pandemic period in Northwest Ethiopia, 2020: a cross-sectional study. BMJ open. 12(9): e063041
27. Iranzad I, Bani S, Hasanpour S, Mohammadalizadeh S, Mirghafourvand M. (2014). Perceived social support and stress among pregnant women at health centers of Iran-Tabriz. *Journal of caring sciences.* 3(4):287.
28. Olajubu AO, Omoloye GO, Olajubu TO, Olowokere AE. (2021). Stress and resilience among pregnant teenagers in Ile-Ife, Nigeria. European Journal of Midwifery. 5.
29. Yunianto AE, Fadly D, Abdurrahmat A, Laksmini P, Indah W, et al. (2022).Stress Level to Dietary Habits among Adolescent in Indonesia during COVID 19 Outbreak: A Nationwide Survey. Open Access *Macedonian Journal of Medical Sciences.* 10(E):116-120.
30. Peter PJ, de Mola CL, de Matos MB, Coelho FM, Pinheiro KA, et al. (2016). Association between perceived social support and anxiety in pregnant adolescents. *Brazilian Journal of Psychiatry.* 39:21-27
31. Chou F-H, Kuo S-H, Wang R-H. (2008). A longitudinal study of nausea and vomiting, fatigue and perceived stress in, and social support for, pregnant women through the three trimesters. The *Kaohsiung journal of medical sciences.* 24(6):306-314.
32. Wellings K, Jones KG, Mercer CH, Tanton C, Clifton S, et al. (2013). The prevalence of unplanned pregnancy and associated factors in Britain: findings from the third National Survey of Sexual Attitudes and Lifestyles (Natsal-3). The Lancet. 382(9907):1807-1816.
33. Otsuki J, Okada A, Morimoto K, Nagai Y, Kubo H. (2004). The relationship between pregnancy outcome and smooth endoplasmic reticulum clusters in MII human oocytes. *Human Reproduction.* 19(7):1591-1597.
34. Takatsuji K, Sugimoto Y, Ishizaki S, Ozaki Y, Matsuyama E, et al. (2008). The effects of examination stress on salivary cortisol, immunoglobulin A, and chromogranin A in nursing students. Biomedical Research. 29(4):221-224.
35. Canuso R. (2003). Low-income pregnant mothers' experiences of a peer-professional social support intervention. Journal of Community Health Nursing. 20(1):37-49.

DOI:10.31579/2578-8965/222