Assessment of perceived stress and associated factors among pregnant women attending antenatal care at Arba Minch town governmental health institutions, southern Ethiopia, 2020

Abdi Deksisa Bane (abdideksisa4@gmail.com)
Arsi University https://orcid.org/0000-0003-1544-8791
Wubshet Estifanos Madebo
Arba Minch University college of Medicine amd health sciences
Gisila Endashaw
Medicines and Healthcare Products Regulatory Agency
Wondu Abera Bezabih
Arsi University College of Health Sciences
Kasahun Beyene Workie
Arsi University College of Health Sciences
Teklu Wosenyelehu
Mettu University

Research article

Keywords: Antenatal care, Ethiopia, Perceived stress, Pregnant women

Posted Date: October 20th, 2020

DOI: https://doi.org/10.21203/rs.3.rs-93496/v1

ASSESSMENT OF PERCEIVED STRESS AND ASSOCIATED FACTORS AMONG PREGNANT WOMEN ATTENDING ANTENATAL CARE AT ARBA MINCH TOWN GOVERNMENTAL HEALTH INSTITUTIONS, SOUTHERN ETHIOPIA, 2020

AUTHORS: Abdi Deksisa[1], Wubshet Estifanos[2], Gisila Endashaw[2], Wondu Abera[1], Kasahun Beyene[1], Teklu Wosenyeleh[3]

[1] Department of Midwifery, Arsi University College of Medicine and Health Sciences, Asella, Ethiopia

[2] School of Nursing, Arba Minch University College of Medicine and Health Sciences, Arba Minch, Southern Ethiopia

[3] Department of Nursing, Mettu University Faculty of Public Health and Medical Science, Mettu, western Ethiopia.

Authors' email addresses

AD: abdideksisa4@gmail.com

WE: estifo.wubshet@gmail.com

GE: Gisila.endashaw@amu.edu.et

WA: wonduabera34@gmail.com

KB: kbeyene2016@gmail.com

TW: teklu.w2020@gmail.com

ABSTRACT

Introduction: Perceived stress is a real or apparent inconsistency between environmental demands required for survival and an individual's capacity to adjust to these requirements. Worldwide stress is a very common problem. Females are at increased risk to develop perceived stress in antepartum period. Stress during pregnancy has serious effects for both the mother and newborn. However this problem doesn't get adequate attention during antenatal care in Ethiopia.

Objective: To assess the magnitude of perceived stress and associated factors among pregnant women attending antenatal care at Arba Minch town governmental health institutions, Southern Ethiopia, 2020

Methods: Institution based cross-sectional study was employed from March 16 to April 23, 2020. A total of 460 mothers were included in the study. Systematic sampling was used to select participants. Data were collected using structured pretested questionnaire, entered in to epi data version 3.1 and then exported to SPSS version 25 for analysis. A bivariable and multivariable logistic regression analysis was used to identify factors associated with outcome variable and variables with P value <0.05 in the final model were considered statistically significant.

Result: The magnitude of perceived stress during pregnancy was 23.1% (95% CI; 19.16-26.96%). Multigravida (AOR= 3.95, 95% CI; 1.94 – 8.02), ANC initiation <16 weeks of gestation (AOR= 2.05, 95% CI; 1.18 – 3.57), first trimester (AOR= 3.03, 95% CI; 1.34 – 6.85) and unplanned pregnancy (AOR= 4.32, 95% CI; 2.55 – 7.31) were associated factors of perceived stress during pregnancy.

Conclusion and recommendation: The findings showed that the magnitude of perceived stress during pregnancy is high. Gravidity, time of ANC initiation, gestational age and status of pregnancy were statistically significant associated factors of perceived stress during pregnancy. Assessment and provision of emotional support for pregnant women is very crucial.

Key words: Antenatal care, Ethiopia, Perceived stress, Pregnant women

Background

Stress is an actual or perceived disparity between environmental demands required for existence and an individual's capacity to adapt to these desires (1). Perceived stress during pregnancy is defined as the disparity that a gravid lady feels when she cannot deal with demands and worries (2). Pregnancy is considered stressful period that may provoke mental illness and low level of perceived stress during pregnancy is good for the most favorable development of the fetus, but if it goes beyond it may lead to long term effect on the fetus, and change the development of the fetal nervous system (3).

Stress during pregnancy is a very common problem with nearly three-quarters of women reported they had experienced at least one stressful event before the delivery of their child (4). In Africa studies employed in democratic republic of Congo, Nigeria and Ghana show that the prevalence of perceived stress during pregnancy was 57.1%, 46.7% and 28.6% respectively (25–27). Similarly the study conducted in Ethiopia shows that the prevalence of perceived stress during pregnancy is 11.6% (8).

Maternal stress can lead to increased rates of infant mortality, low birth weight and preterm birth, which may have long term negative consequences for health and development of the child (5). Studies have shown that women experiencing high stress are 1.5 to 3 times more likely to experience preterm delivery than less stressed women (6). In order to prevent the adverse outcome of stress during pregnancy for both the mother and fetus it is necessary to screen and provide appropriate support during antenatal period by nurses, midwives, obstetricians and mental health specialists (7). Even though majority of pregnant woman's attend antenatal care which is recommended by world health organization current antenatal care is ill-equipped to identify women suffering from high levels of stress or it does not assess emotional status of pregnant mothers (8). In Ethiopia the antenatal care guideline does not assess the emotional status of the pregnant mothers (9).

The study conducted in Ethiopia, Bale zone from November 2016 to April 2017 shows that; among 386 pregnant mothers enrolled in the study the prevalence of perceived stress was 11.6% (9). The magnitude of perceived stress was 12.4% in Iran, 6% in United states of America, 7.33% in Ardabil Iran and 17.2% in Canada (39,7,40,28). Other studies shows that

the magnitude of stress in Saudi Arabia was 33.4%, Ghana 50%, Democratic republic of Congo 57.1%, Nepal 34%, America 28% and Ghana 28.6% (41,29,25,42,37,27).

Multiple investigations indicate that multigravida mothers are highly considered to have perceived stress when compared with primigravida mothers (8,36). In opposite studies conducted in Northern Ireland and Bangalore shows that multigravidas had low prenatal stress and primigravida have significant association with perceived stress during pregnancy (35,12). Perceived stress is also high among mothers who initiate antenatal care after 16 weeks of gestation (10). The study conducted in Ethiopia indicates that gestational age less than twelve weeks or first trimester is positively associated with perceived stress during pregnancy (9). Studies conducted in different parts of the world show that unplanned pregnancy is significantly associated with perceived stress during pregnancy (10,11).

During antenatal care follow up pregnant mothers are not scanned to diagnose stress and due to this fact it's difficult to identify which women are stressed (12). To the investigator knowledge, there is only a single study done in Ethiopia among pregnant mothers but it lacks important variables. Those missed variables include psychosocial variables like social support, sexual abuse, women concern about husband, family support, husband financial and emotional support. Additionally the prevalence and contributing factors of perceived stress which is representative of all women of the antenatal period is not studied specifically in study area. Therefore, this study aimed to address perceived stress in pregnant mothers by adding some important variables.

Conceptual frame work

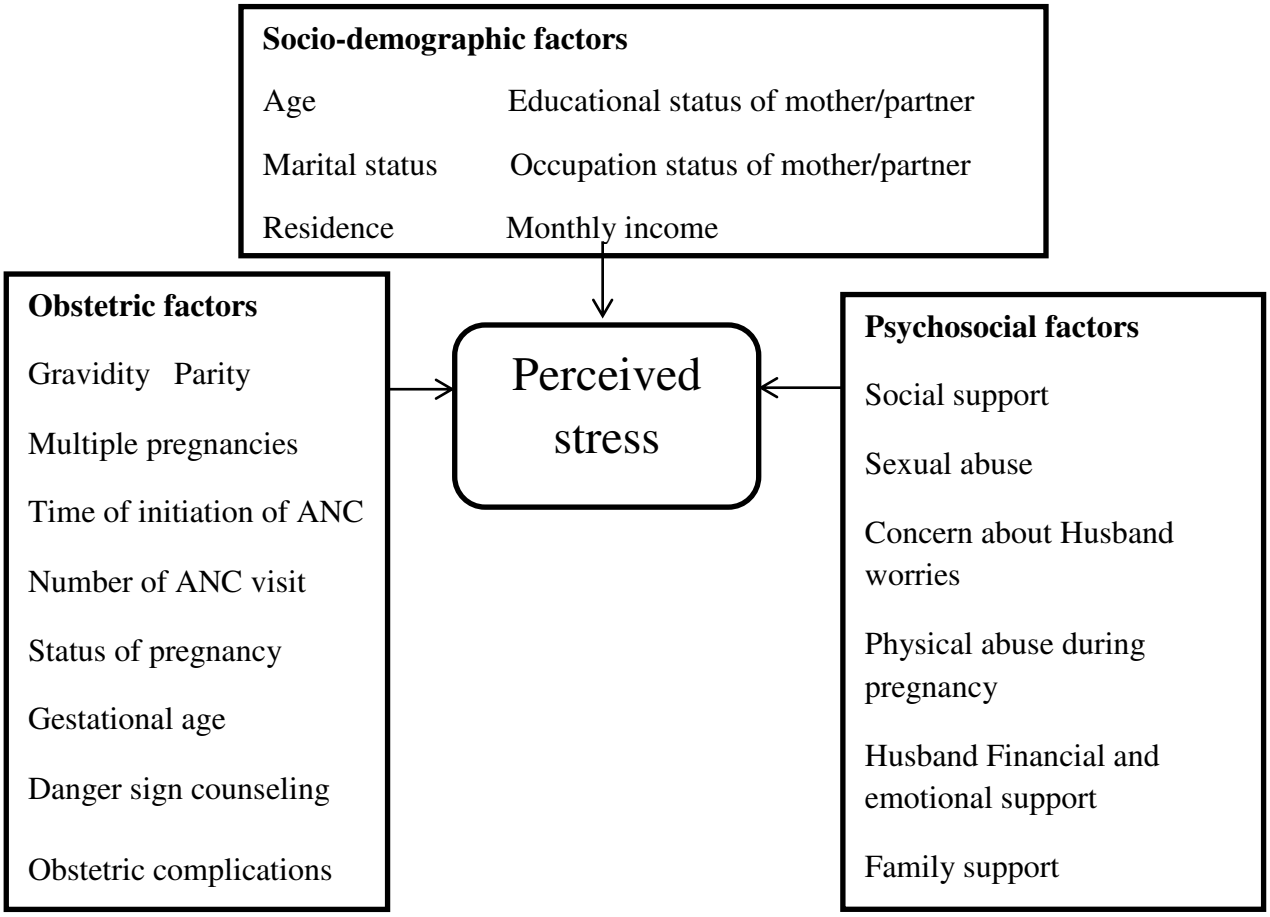

Figure 1: Conceptual framework developed from literatures to assess perceived stress and associated factors among pregnant mothers attending antenatal care at Arba Minch town governmental health institutions, southern Ethiopia, 2020 (7,8,9,10)

Methods

Study design and setting

Institution based cross sectional study was conducted from March 16 to April 23, 2020. Arba Minch town is the capital of Gamo zone, which is 435 km from Addis Ababa and about 275 Km from Hawassa. The town has a total population of more than 200,373, of which 50.2% are females (44). Arba Minch town has an altitude ranged from 1200-1300 meters above sea level with an average annual temperature of 29.70C. Arba Minch town has rain fall of 700 mm per annum (44). The town has 1 general hospital and 2 governmental health centers.

Sample size and sampling procedure

Sample size was determined by using single population proportion (SPP) formula based on the assumptions of 95% confidence level, 11.6% p-value (previous home study), 3% marginal error and a 5% contingency. Finally, total sample size was 461. In this study all governmental health institutions that provide ANC service in Arba Minch town were included. The total population for these health institutions from their previous average monthly ANC client flows of at least for three months was considered. Based on proportional allocation sample size was allocated for each health facility. Skip interval was determined for each heath facility by dividing the estimated population by the respective sample size (i.e. Kth = N / n). Hence, each participant was selected by systematic sampling with skip interval of 2 at each institution. Using lottery method, 1 was selected and used as a starting number based on their arrival order. Subsequently, every other mother was included until the desired sample size was achieved. (Figure 2)

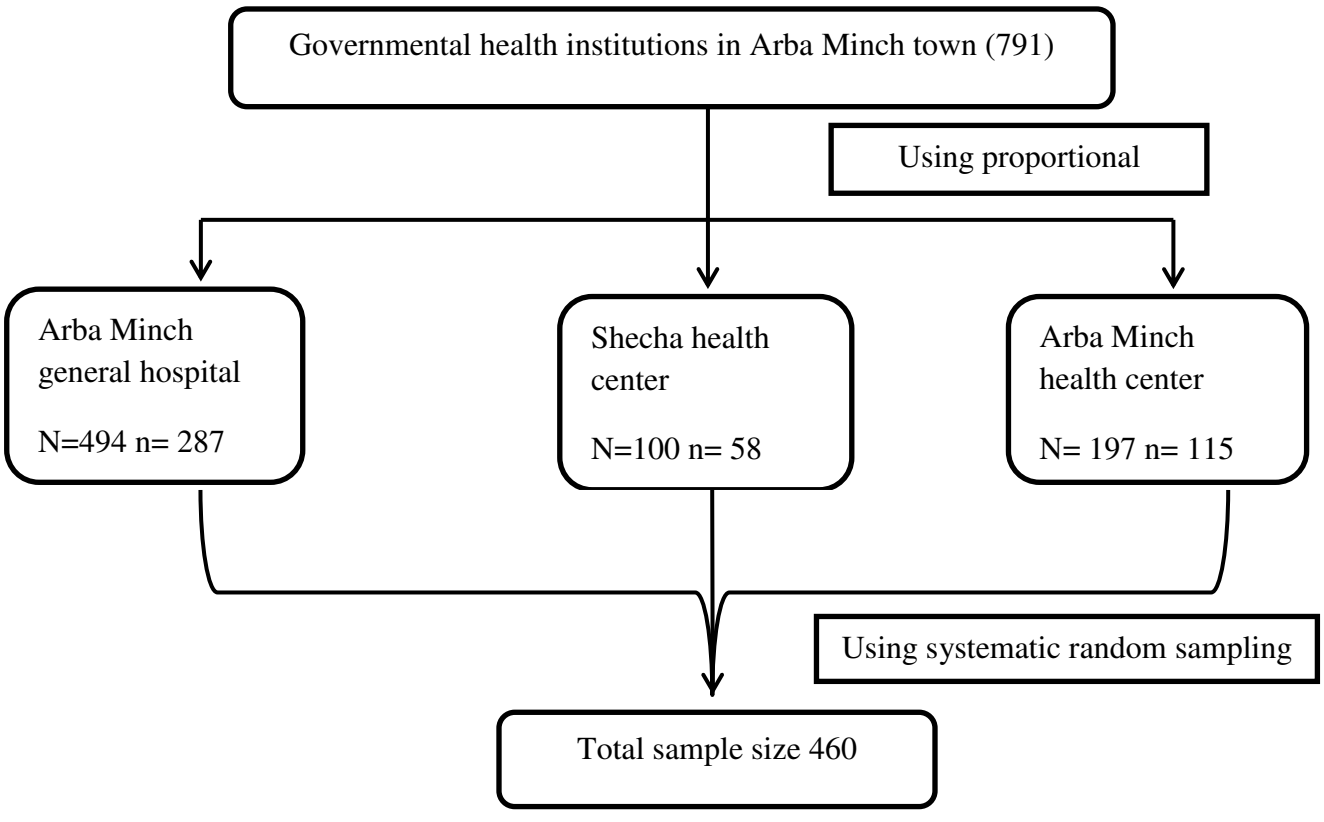

Figure 2: Schematic representation of sampling procedure to assess perceived stress and associated factors among pregnant women attending antenatal care at Arba Minch town governmental health institutions, southern Ethiopia, 2020

Measurement

Data were collected by face to face interview by 3 female BSc midwives. Structured questionnaire was used to collect the data. It has five sections. It contains socio-demographic variables, obstetric variables, maternal social support questions, perceived stress scale questions and psychosocial variable. Perceived stress was measured with the perceived stress scale (PSS). PSS is a 7-item multiple-choice self-report psychological instrument for measuring the perception of stress. Each answer is scored 0 to 3 (13). Perceived stress scale is an instrument used to measure perception of stress. The questions were designed to tap the degree and frequency of stressful thoughts during previous one month. Social support was measured using Maternity Social Support Scale (MSSS) (47). Obstetric and psychosocial variables was developed from different literatures (9,10).

Operational definition

Perceived stress: perceived stress is the imbalance that a pregnant woman feels when she cannot cope with demands, which is expressed both behaviorally and physiologically. Perceived stress scale is scored by summing across all scale items. The total score ranges from 0.0–21.0 with higher scores indicating women with more perceived stress symptoms. The cutoff value for the stress limit was set at 15 (9,13,14).

Social support: Social support is the accessible support for a pregnant woman through social relationships with other people, groups, and the larger community. Social support was classified into three categories; high social support (for scores 24–30), medium social support (18–23) and low social support (below 18) (15).

Statistical analysis

The pre coded responses were entered into Epi data version 3.1 software and then it was exported to SPSS version 25 for statistical analysis. The perceived stress and social support

questions were computed using likert scale. The descriptive data were presented using frequency, tables, figures, mean and standard deviation. A binary logistic regression was used to identify the association of the independent variables with the dependent variable. Each variable which have p-value less than 0.25 was added to the final model to control the confounders. Variables which have a p-value <0.05 with 95% confidence interval in the final model were declared statistically significant. Hosmer and Lameshow goodness of fit test was conducted to test the model fitness and the model was adequate (p=0.876). Multicollinearity was checked by using VIF and it was < 10.

Data quality control

To maintain data quality and make further adjustment the questioner was pretested in Lante health center on 23 (5%) pregnant mothers. Supervision was conducted by the supervisor and the principal investigator and on spot questionnaire was checked for completeness and further edition. Sudden observation of how data collectors administer the questions to the respondents was made. Each data collector checks the questionnaires for completeness before winding up their visit to each study participant.

Ethical issues

Ethical clearance was obtained from Institutional Research Ethics Review Board (IRB) of College of Medicine and Health Sciences, Arba Minch University with reference number of IRB/177/12. Written permission was obtained from Arbaminch University. Consent was obtained from medical directors and respective unit heads at each health institutions. Verbal consent was obtained from individual clients. Confidentiality was strictly maintained for each piece of information and the interview was conducted in strict private place.

Results

Socio-demographic Characteristics

A total of 451 pregnant mothers were participated in this study giving a response rate of 98.04%. The mean (mean ± SD) age of the respondents was 27 ± 8 years. Among the total participants, 186 (41.2%) of mothers attended secondary school and above. About 205 (45.5%) of the women were protestant in religion. Nearly half of the mothers 220 (48.8%) were Gamo in ethnicity and 407 (90.24%) of the mothers were married. With regard to

occupational status housewife takes larger proportion 211 (46.8%). The majority 357 (79.2%) of the mothers were urban residents. About 229 (50.8%) of husbands attended secondary school and above, and 173 (38.4%) of husbands were government employee (Table 1).

Table 1: Socio-demographic characteristics of pregnant women attending antenatal care unit of Arba Minch town governmental health institutions, southern Ethiopia, 2020, (n = 451)

Variable	**Category**	**Frequency**	**Percent %**
Age	≤ 24 years	157	34.8
	25-34 years	216	47.9
	≥ 35 years	78	17.3
Educational status of mother	Can't read and write	120	26.6
	Can read and write	91	20.2
	Primary school	54	12
	Secondary and above	186	41.2
Religion of the mother	Protestant	205	45.5
	Orthodox	193	42.8
	Muslim	40	8.9
	Catholic	12	2.7
	Wakefeta	1	0.2
Ethnicity of the mother	Gamo	220	48.8
	Gofa	57	12.64
	Wolaita	65	14.4
	Konso	39	8.66
	Amhara	41	9.1
	Oromo	27	6.0
	Tigre	2	0.4
Marital status	Married	407	90.3
	Single	33	7.3
	Divorced	5	1.1
	Widowed	6	1.3
Occupational status of the mothers	Housewife	211	46.8
	Merchant	54	12.0
	Government employee	86	19.1
	Farmer	10	2.2
	Laborer	12	2.7
	Student	74	16.3
	Others (private)	4	0.9
Residence of mother	Urban	357	79.2
	Rural	94	20.8
Educational status of the father	can't read and write	32	7.1
	can read and write	145	32.1
	Primary school	45	10

	Secondary and above	229	50.8
Occupational status of the father	Farmer	59	13
	Merchant	86	19.1
	Government employee	173	38.4
	Student	18	4.0
	Laborer	103	22.8
	Others (driver, private)	12	2.7
Monthly income	0-500	25	5.5
	501-1000	33	7.3
	1001-1500	57	12.6
	1501-2000	91	20.3
	>2000	245	54.3

Obstetric factors

From the total pregnant mothers participated in this study 284 (63%) of them were multigravidas. Among the respondents 209 (46.3%) of them were nulliparous. About 262 (58.1%) of the mothers initiate antenatal care follow up before 16 weeks of gestation and 306 (67.8%) of pregnancies were planned. The mean gestational age of the mothers was (23±8) weeks. Majority 420 (93.1%) of the pregnancies were singleton pregnancies. During current pregnancy or previous pregnancy, 338 (74.9%) of the study subjects reported that they doesn't face any type of complication. Among the participants 429 (95.1%) of them said they were counseled on danger signs of pregnancy (Table 2).

Table 2: Obstetric characteristics of pregnant women attending antenatal care units of Arba Minch town governmental health institutions, southern Ethiopia, 2020 (n=451)

Variable	**Category**	**Frequency**	**Percentage (%)**
Gravida	Primigravida	136	30.2
	Multigravida	284	63.0
	Grand multigravida	31	6.8
Para	Nulliparous	209	46.3
	Primiparous	95	21.1
	Multipara	147	32.6
Time of ANC initiation	Before 16 weeks	262	58.1
	After 16 weeks	189	41.9
Gestational age	First trimester	55	12.2
	Second trimester	198	43.9
	Third trimester	198	43.9
Status of pregnancy	Planned	306	67.8
	Unplanned	145	32.2
Multiple pregnancy	Yes	31	6.9

	No	420	93.1
Mother faced complications	Yes	113	25.1
	No	338	74.9
Type of complications faced by mothers	Prolonged labor	16	14.16
	Heavy bleeding	9	7.96
	Retained placenta	7	6.2
	Abortion	72	63.72
	Still birth	3	2.65
	Child death	5	4.42
	Cervical incompetence	1	0.89
Counseled about danger signs	Yes	429	95.1
	No	22	4.9

Regarding number of antenatal care follow up or visit, from the total participants of this study about 168 (37.3%) of pregnant mothers were on first antenatal care visit during data collection period (Figure 3).

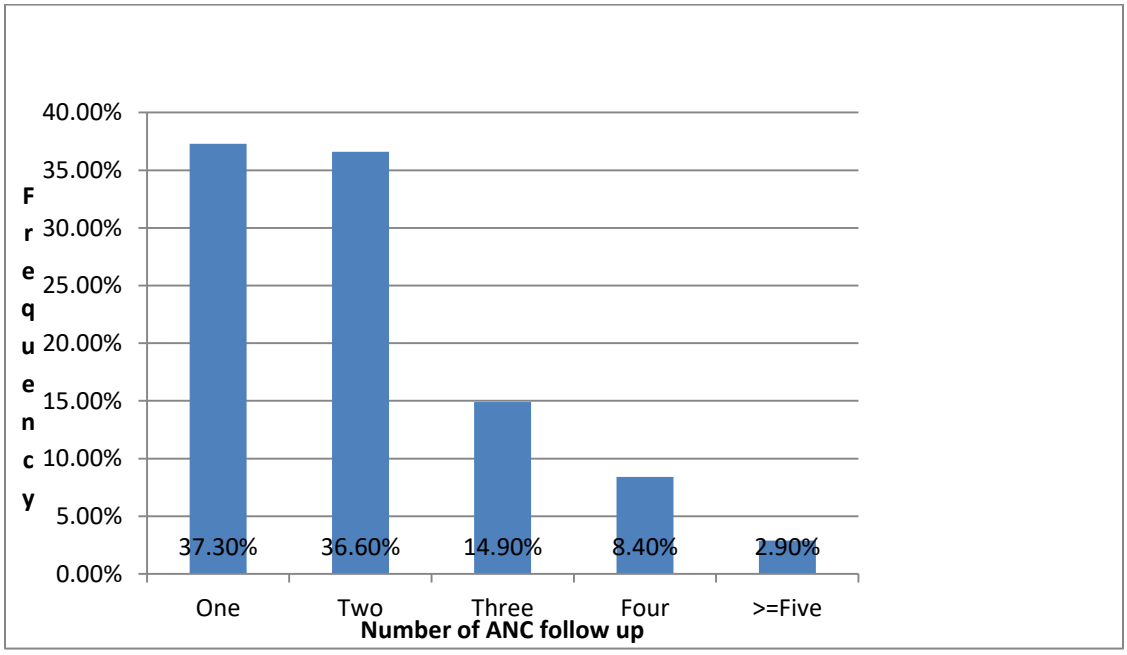

Figure 3: Number of ANC follow up among pregnant women attending antenatal care unit of Arba Minch town governmental health institutions, southern Ethiopia, 2020 (n=451)

Psychosocial factors

Maternal social support scale

Among the respondents 313 (69.4%) of the mothers have good friends who support them, 367 (81.4%) of the subjects had family always there for them and 403 (89.4%) of the mothers said their husband/partner helps them a lot. About 399 (88.5%) the mothers reported they have no conflict with their husband or partner and 391 (86.7%) of the respondents said they did not feel controlled by their husband/partner. The majority 386 (85.6%) of the mothers, feel loved by their husband or their partner. Regarding the maternal social support scale from total pregnant mothers participated in this study 212 (47%) of them has low maternal social support (Figure 4).

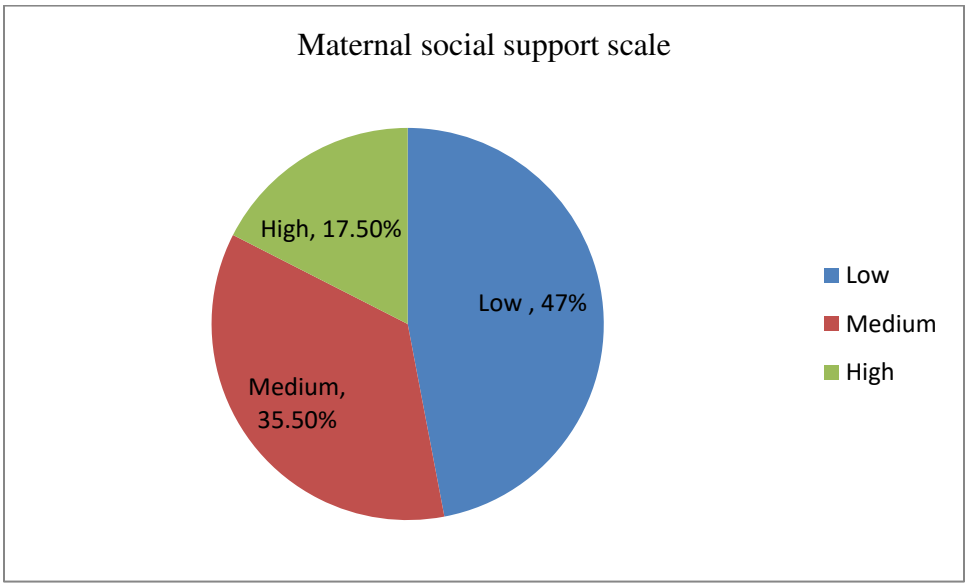

Figure 4: maternal social support scale result among pregnant women attending antenatal care units of Arba Minch town governmental health institution, southern Ethiopia, 2020 (n=451)

Other psychosocial factors

Among the total 451 pregnant mothers participated in this study 316 (70.1%) of them said they have no concern towards their husband worries. From those mothers who have a concern toward their husband worries 51 (52.59%) of them have concern about their husbands health. About 386 (85.6%) of mothers said their husbands provide an emotional support during their pregnancy time. Among the total participants 390 (86.5%) of mothers said their husbands provide financial support during their pregnancy time. Majority 327 (72.5%) of mothers have family support at their pregnancy period (Table 3).

Table 3: Psychosocial factors among pregnant women attending antenatal care units of Arba Minch town governmental health institution, southern Ethiopia, 2020 (n=451)

Variable	Category	Frequency	Percentage
Concern towards husband worries	Yes	135	29.9
	No	316	70.1
Reason for concern toward husband worries	Fear of his health	71	52.6
	Fear of losing his job	51	37.8
	Others	13	9.6
Husband emotional support during pregnancy	Yes	386	85.6
	No	65	14.4
Husband financial support during pregnancy	Yes	390	86.5
	No	61	13.5
Family support during pregnancy	Yes	327	72.5
	No	124	27.5

Abuse during pregnancy

Most 370 (82%) of the mothers were not emotionally or physically abused by their partner or someone important to them. In the last year, 397 (88%) of the subjects said they were not hit, slapped, kicked or otherwise physically hurt by someone; while the rest were hurt. From those hurt last year many 46(85.2%) of them were hurt by their husbands and the half 27 (50%) were hurt two times. Since pregnant, 427 (94.7%) of mothers said they were not slapped, kicked or otherwise hurt by someone, while the rest of them were hurt. Among those hurt during pregnancy, highest number 20 (83.3%) of them were hurt by their husbands and the majority 16 (66.7%) were hurt only one time. From those hurt during pregnancy threats of abuse including use of weapon was the more 11 (45.8%) frequent one. Within last year, about 424 (94%) of the pregnant mothers said they were not forced to have sexual activities with anyone; while the rest were forced. From those forced to have sexual activities majority 18 (66.7%) were forced by their boyfriend. Among pregnant mothers participated in this study 401 (88.9%) of them doesn't afraid of their partner or anyone (Table 4).

278 Table 4: Abuse among pregnant women attending antenatal care units of Arba Minch town
279 governmental health institution, southern Ethiopia, 2020 (n=451)

Variable	Category	Frequency	Percentage
Have you ever been emotionally or physically abused by your partner or someone important to you?	Yes	81	18.0
	No	370	82.0
Within the last year, have you been hit, slapped, kicked or otherwise physically hurt by someone?	Yes	54	12.0
	No	397	88.0
If hit, slapped, kicked or hurt by someone last year; by whom?	Husband	46	85.2
	Ex-husband	1	1.9
	Boyfriend	6	11
	Stranger	1	1.9
If hit, slapped, kicked or hurt by someone last year; total number of times?	One time	12	22.2
	Two times	27	50.0
	Three times	8	14.8
	Four times	6	11.1
	Five times	1	1.9
Since you've been pregnant, have you been slapped, kicked or otherwise physically hurt by Someone?	Yes	24	5.3
	No	427	94.7
If slapped, kicked or hurt by someone during pregnancy; by whom?	Husband	20	83.3
	Boyfriend	3	12.5
	Stranger	1	4.2
If slapped, kicked or hurt by someone during pregnancy; total number of times?	One time	16	66.7
	Two times	7	29.1
	Three times	1	4.2
If slapped, kicked or hurt by someone during pregnancy; score incident?	Threats of abuse	11	45.8
	Slapping	9	37.5
	Punching,	2	8.3
	Beating up	1	4.2
	Head injury	1	4.2
Within the last year, has anyone forced you to have sexual activities?	Yes	27	6.0
	No	424	94.0
If forced for sexual activities by whom?	Husband	9	33.3
	Boyfriend	18	66.7

If forced for sexual activities total number of times	One time	12	44.45
	Two times	12	44.45
	Three times	1	3.7
	Five times	2	7.4
Are you afraid of your partner or anyone?	Yes	50	11.1
	No	401	88.9

Perceived stress

The mean value of perceived stress among pregnant women was 12.64 ± 2.8 (mean ± SD). Overall, the prevalence of perceived stress among pregnant women attending antenatal care unit of Arba Minch town governmental health institutions was 23.1% (95% CI; 19.16-26.96%) (Figure 5). From the total participants 379 (84%) of the mothers were upset because of something that happened unexpectedly in the last month, 339 (75.2%) of the pregnant mothers were unable to control important things in their life during the last month and 392 (86.9%) of the subjects have felt nervous and stressed in the last month. About 401 (88.9%) of the mothers felt that they are confident about their ability to handle their personal problems and the majority 406 (90%) felt that things were going their way. The majority 424 (94%) of the participants were able to control irritations in their life during the last month. In the last month 331 (73.4%) of the subjects were angered because of things that were outside of their control.

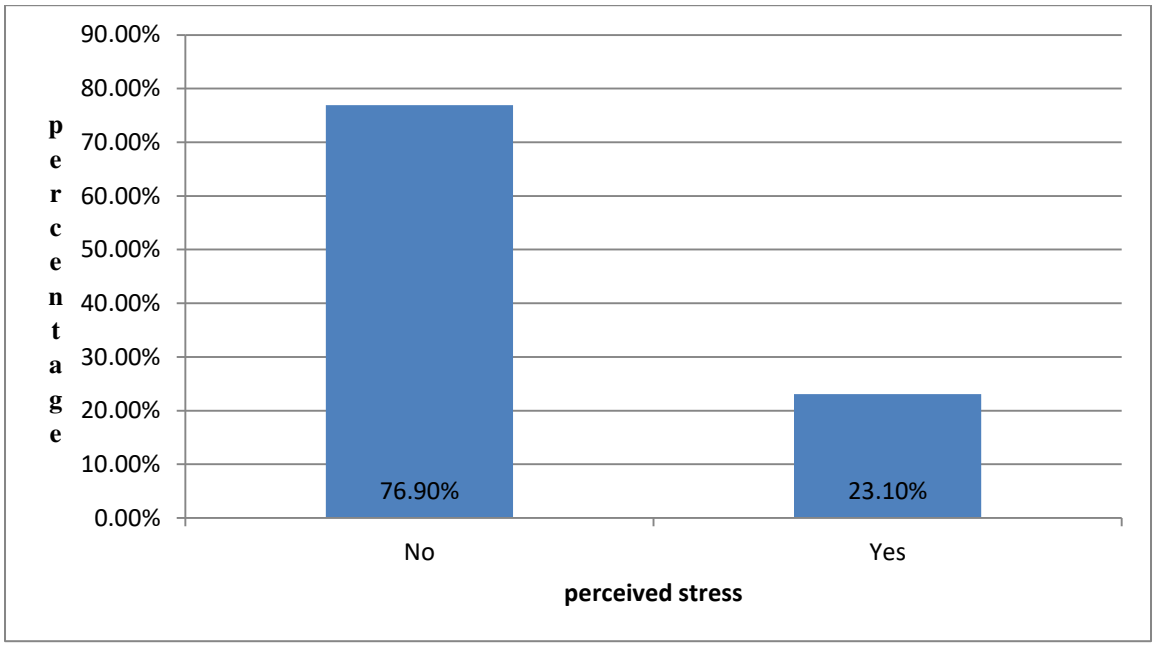

Figure 3: Perceived stress scale among pregnant women attending antenatal care units of Arba Minch town governmental health institution, southern Ethiopia, 2020 (n=451)

Factors associated with perceived stress during pregnancy

The association between perceived stress and its associated factors among pregnant mothers was analyzed using binary logistic regression. All factors which have a p- value <0.25 in bivariable analysis were considered to multivariable logistic regression model.

Hence, educational status of the father, gravidity, time of ANC initiation, gestational age, status of pregnancy (weather planned or unplanned), facing health problem, maternal social support during pregnancy, concern towards husband worries, husband emotional support during pregnancy, husband financial support during pregnancy and family support during pregnancy were included into multivariable analysis. But only, gravidity, time of ANC initiation, gestational age and status of pregnancy were found to be statistically significant at p- value <0.05.

The odds of developing perceived stress during pregnancy was 3.95 times higher among Pregnant women who were multigravida as compared to primigravida woman (AOR= 3.95, 95% CI; 1.94 – 8.02). The odds of having perceived stress was 2.05 times higher among pregnant mothers who initiate antenatal care before 16 weeks than those mothers who initiate antenatal care after 16 weeks of gestation (AOR= 2.05, 95% CI; 1.18 – 3.57). Those mothers with in first trimester of pregnancy had perceived stress 3.03 times higher than mothers with in third trimester (AOR= 3.03, 95% CI; 1.34– 6.85). The likelihood of having perceived stress was about 4.32 times higher for mothers who has unplanned pregnancy (AOR= 4.32, 95% CI; 2.55 – 7.31) as compared to those mothers whose pregnancy was planned (Table 5).

Table 5: Bivariable and multivariable logistic regression model predicting the likelihood of perceived stress among pregnant women attending antenatal care unit at Arba Minch town governmental health institutions, southern Ethiopia, 2020 (n=451)

Variable	Perceived stress		COR (95%CI)	AOR (95%CI)	Pvalue
	Yes	No			
Educational status of the father					

Can't read and write	12 (11.4%)	20 (5.8%)	1.93 (0.89-4.21)	2.02 (0.80-5.11)	
Can read and write	29 (28%)	116 (33.4%)	0.91 (0.56-1.5)	0.87 (0.47-1.60)	
Primary school	15 (14.4%)	30 (8.6%)	0.32 (0.09-1.09)	1.85 (0.81-4.24)	
Secondary& above	48 (46.2%)	181 (52.2%)	1	1	
Gravida					
Multigravida	86 (82.7%)	229 (66%)	2.46 (1.41-4.28)	3.95 (1.94-8.02)*	<0.001
Primigravida	18 (17.3%)	118 (34%)	1	1	
Time of ANC initiation					
Before 16 weeks	75 (72.1%)	187 (53.9%)	2.21 (1.37-3.57)	2.05 (1.18-3.57)*	0.011
After 16 weeks	29 (27.9%)	160 (46.1%)	1	1	
Gestational age					
First trimester	21 (20.2%)	34 (9.8%)	2.44 (1.28-4.65)	3.03(1.34-6.85)*	0.008
Second trimester	43 (41.3%)	155 (44.7%)	1.09 (0.67-1.77)	1.25 (0.71-2.22)	
Third trimester	40 (38.5%)	158 (45.5%)	1	1	
Status of pregnancy					
Unplanned	65 (62.5%)	80 (23%)	5.56 (3.48-8.89)	4.32 (2.55-7.31)*	<0.001
Planned	39 (37.5%)	267 (77%)	1	1	
Health problems during pregnancy					
Yes	21 (20.2%)	92 (26.5%)	0.70 (0.41-1.19)	0.57 (0.30-1.08)	
No	83 (79.8%)	255 (73.5%)	1	1	
Social support					
Low	63 (60.6%)	149 (42.9%)	2.91 (1.41-6.02)	1.74 (0.73-4.10)	
Medium	31 (29.8%)	129 (37.2%)	1.65 (0.76-3.58)	1.29 (0.54-3.10)	
High	10 (9.62%)	69 (19.9%)	1	1	
Concern toward husband worries					
Yes	40 (38.5%)	95 (27.4%)	1.65 (1.04-2.62)	1.52 (0.88-2.64)	

No	64 (61.5%)	252 (72.6%)	1	1
Husband emotional support				
No	25 (24%)	40 (11.5%)	2.42 (1.39-4.24)	3.98 (0.392-4.60)
Yes	79 (76%)	307 (88.5%)	1	1
Husband financial support				
No	24 (23%)	37 (10.7%)	2.51 (1.42-4.44)	0.34 (0.03-3.67)
Yes	80 (77%)	310 (89.3%)	1	1
Family support				
No	40 (38.5%)	84 (24.2%)	1.95 (1.22-3.11)	1.04 (0.57-1.88)
Yes	64 (61.5%)	263 (75.6%)	1	1

DISCUSSION

The magnitude of perceived stress among pregnant women attending antenatal care unit of Arba Minch town governmental health institutions was found to be 23.1% (95% CI; 19.16-26.96%). This finding was higher than the study conducted in Bale zone Ethiopia which found that 11.4 % of mothers had perceived stress during their pregnancy (9). The possible explanation for this difference might be due to difference in age group among each study respondents and educational status in which majority of this study participants were not educated while compared with the Bale study. The discrepancy can also be as a result of difference in geographical factors.

This study finding was also higher than the studies carried out in Iran 12.4%, United states of America 6%, Ardabil Iran 7.33% and Canada 17.2% (16–19). The reason for this difference might be the socio-cultural difference, geographical area, economic status and difference in life standard across the countries. The inconsistency can also be due to small sample size especially for studies conducted in Iran in which only 200 mothers participated in the study. The other possible reason for this difference may be due to lack of an ability to deal with stressful events between current study participants and those studies.

Inversely, the finding in this study was lower than studies conducted in Saudi Arabia 33.4%, Ghana 50%, Democratic republic of Congo 57.1%, Nepal 34%, America 28% and Ghana

28.6% (20–25). The discrepancy can be explained as due to difference in socio cultural status, study period and study setting. The other possible reason might be in Ethiopia the community widely supports women during pregnancy and this may reduce stress among pregnant women.

In current study, multigravida women were more likely to have perceived stress than those who were primigravida. This finding is supported by study findings conducted in Bale zone Ethiopia, and united states of America (9,12). This similarity may be due to the same socio-cultural and living standard across the country especially with the study conducted in Ethiopia. This finding is opposed with studies conducted in Northern Ireland and Bangalore which show that multigravidas had low prenatal stress and primigravida have significant association with perceived stress during pregnancy (8,26). The possible reason for this discrepancy might be due to burden applied to multigravida mothers.

This burden can occur due to low economic status and taking responsibility of raising a child. Mothers with previous bad obstetric history may also be worried towards current pregnancy and this may lead them to stress too.

In the present study, pregnant women who initiate antenatal care before 16 weeks of gestation had significant association with perceived stress than those mothers who initiate antenatal care after 16 weeks of gestation. This finding is in contrary with the study employed in China which states that late initiation of antenatal care is significantly associated with higher level of perceived stress (11). The possible explanation for this difference might be pregnant mothers in this study who have the feeling of stress may seek health care early than those who have normal status. Women's in early period of pregnancy face different physiological changes and this change may expose them to stress. To alleviate this feeling of stress pregnant mothers may seek health care early and diagnosed with perceived stress. The other reason for this discrepancy might be pregnant women with previous obstetric complications may be highly concerned about current pregnancy status and this can lead them to have stress. So, as known if the women has previous pregnancy problem there is a high chance that she goes to health institution early and she may be diagnosed with stress before sixteen weeks of gestation.

According to this study finding, pregnant women with in first trimester of gestation had perceived stress when compared with pregnant women with third trimester of gestation. This finding is in line with the study carried out at Bale zone of Ethiopia (9).

This study finding shows that perceived stress during pregnancy was higher for mothers whose pregnancies were unplanned than mothers whom pregnancies were planned. This finding is supported by studies conducted in India and China (10,11). The consistency may be due to dilemma or worrying about what to do with unplanned pregnancy among all pregnant women regardless of the country they are living in. The similarity might also be as a result of lower socioeconomic status which makes mothers difficult to cope up with pregnancy and inability of raising a child with limited resource. Additionally lack of social support during pregnancy especially for unplanned one may lead the mother to be isolated and this may result in stress. Stress may also develop among mothers who have lack of interest in accepting unplanned pregnancy.

Stress during pregnancy might also occur among women with unplanned pregnancy due to their occupational status since the pregnancy of majority of students were unplanned and with increasing maternal age the chance of occurrence of unplanned pregnancy is higher and this can also leads stress during pregnancy.

Strengths of the study

Many variables were addressed and assessed.

Limitations of the study

This study was an institution-based study; hence findings may not reflect the stress of all pregnant women in the community. Social desirability bias could also be a concern. The cross-sectional study could not help the researcher to establish cause - effect relationship.

Conclusion and Recommendations

The magnitude of perceived Stress during pregnancy was high among pregnant women attending antenatal care in the study area. Multigravidas, antenatal care initiation before 16 weeks of gestation, first trimester pregnancy and unplanned pregnancy expose the mother to perceived stress during pregnancy. Pregnant women's should discuss with their partner or their family members and health care professionals on their emotional status. Health care

professionals should assess feeling of multigravida women and provide adequate information on their pregnancy, provide emotional support regardless of ANC initiation, encourage mothers with early pregnancy and advise pregnant mothers. Town health bureau should strengthen health extension workers to counsel and advice the mothers about stress during pregnancy, arrange community based interventional strategies and provide family planning methods for those in need,. Health care managers and policy makers should strengthen policies and strategies focused on women education, use this study as an input to carry out further investigation and make the problem get addressed. Educators should use the findings in teaching learning process and researchers should conduct mixed study to identify different factors like social support.

List of Abbreviations

ANC: Antenatal Care

IRB: Institutional Research Ethics Review Board

MSSS: Maternity Social Support Scale

PSS: Perceived Stress Scale

WHO: World Health Organization

Competing Interest

The authors have declared that no competing interests exist.

Acknowledgement

We would like to give our heart felt gratitude to Arba Minch town governmental health institutions for providing us necessary information. We acknowledge Arba Minch University College of Medicine and Health Science, school of Nursing for giving us a chance to develop this research paper. Our deepest gratitude also goes to the study participants, data collectors and for all who ever assisted us in developing this research paper.

Authors' contributions

AD: Developed design, coordinated the study, performed statistical analysis and sequence alignment, and drafted the manuscript. WE: Participated on Design development, performed statistical analysis, participated drafting the manuscript. GE: Coordinated the study, developed design, statistical analysis and participated manuscript draft development. WA: Coordinated the study, entered data, participated in developing the document KB: Participated on Design development, entered data and participated manuscript draft development. TW: Coordinated the study, entered data, participated in developing the document. All these authors read and approved the final manuscript.

Authors' Information

[1] Department of Midwifery, Arsi University College of Medicine and Health Sciences, Oromia, Ethiopia

[2] School of Nursing, Arba Minch University College of Medicine and Health Sciences, Arba Minch, Southern Ethiopia

[3] Department of Nursing, Mettu University Faculty of Public Health and Medical Science, Mettu, western Ethiopia.

References

1. Fink G. Stress: Definition and history. Stress Sci. 2010 Jan 1;3–9.

2. Ruiz RJ, Fullerton JT. The measurement of stress in pregnancy. Nurs Health Sci. 1999 Mar;1(1):19–25.

3. Gul F, Sherin AL, Jabeen M, Khan SA. Association of stress with anxiety and depression during pregnancy. JPMA The Journal of the Pakistan Medical Association. 2017;67(12):1803–8.

4. Mental Health Foundation. Stress and pregnancy (prenatal and perinatal) | Introduction [Internet]. Encyclopedia on Early Childhood Development. 2018 [cited 2019 Nov 28]. Available from: http://www.child-encyclopedia.com/stress-and-pregnancy-prenatal-and-perinatal/introduction

5. Hobel CJ, Goldstein A, Barrett ES. Psychosocial stress and pregnancy outcome. Clin Obstet Gynecol. 2008;55(2):333–48.

6. Susan Cha, Saba W. Masho. Preterm Birth and Stressful Life Events | IntechOpen [Internet]. 2013 [cited 2019 Nov 28]. Available from: https://www.intechopen.com/books/preterm-birth/preterm-birth-and-stressful-life-events

7. Staneva A, Bogossian F, Pritchard M, Wittkowski A. The effects of maternal depression, anxiety, and perceived stress during pregnancy on preterm birth: A systematic review. Women and Birth. 2015 Sep 1;28(3):179–93.

8. Lynn FA, Alderdice FA, Crealey GE, McElnay JC. Associations between maternal characteristics and pregnancy-related stress among low-risk mothers: An observational cross-sectional study. International Journal of Nursing Studies. 2011 May 1;48(5):620–7.

9. Engidaw N, Mekonnen A, Amogne F. Perceived stress and its associated factors among pregnant women in Bale zone Hospitals, Southeast Ethiopia: a cross-sectional study. BMC Research Notes. 2019 Dec 1;12(356).

10. Vijayaselvi R, Beck MM, Abraham A, Kurian S, Regi A, Rebekah G. Risk Factors for Stress During Antenatal Period Among Pregnant Women in Tertiary Care Hospital of Southern India. J Clin Diagn Res. 2015 Oct;9(10):QC01-05.

11. Lau Y, Yin L. Maternal, obstetric variables, perceived stress and health-related quality of life among pregnant women in Macao, China. Midwifery. 2011 Oct 1;27(5):668–73.

12. Pais M, Pai MV. Stress among pregnant women: A systematic review. Journal of Clinical and Diagnostic Research. 2018 May 1;12(5):LE01–4.

13. Cohen S, Kamarck T, Mermelstein R. A global measure of perceived stress. Journal of Health and Social Behavior. 1994;235–83.

14. Mekonnen A, Amogne F, Kassahun C. Risk Factors of Hyperemesis Gravidarum among Pregnant Women in Bale Zone Hospitals, Southeast Ethiopia: Unmatched Case-Control Study. Clinics in Mother and Child Health. 2018 Jan 1;15.

15. Webster J, Linnane JW, Dibley LM, Hinson JK, Starrenburg SE, Roberts JA. Measuring social support in pregnancy: can it be simple and meaningful? Birth. 2000 Jun;27(2):97–101.

16. Shishehgar S, Dolatian M, Majd H, Bakhtiary M. Socioeconomic Status and Stress Rate during Pregnancy in Iran. Global Journal of Health Science. 2014 Apr 22;6(4):p254.

17. Woods SM, Melville JL, Guo Y, Fan M-Y, Gavin A. Psychosocial stress during pregnancy. Am J Obstet Gynecol. 2010 Jan;202(1):61.e1-7.

18. Mirghafourvand M, Mohammad-Alizadeh S, Malakouti J. Perceived Stress and its Relationship With Social Support in Pregnant Women Referring to Health Centers of Ardabil, Iran. 2019 Oct 8;6:505–10.

19. Rieger K, Heaman M. Factors Associated With High Levels of Perceived Prenatal Stress Among Inner-City Women. Journal of Obstetric Gynecologic & Neonatal Nursing. 2016 Mar 1;45.

20. Ahmed AE, Albalawi AN, Alshehri AA, AlBlaihed RM, Alsalamah MA. Stress and its predictors in pregnant women: a study in Saudi Arabia. Psychol Res Behav Manag. 2017;10:97–102.

21. Ae-Ngibise K, Wylie B, Boamah E, Jack D, Oppong F, Chillrud S, et al. Prenatal maternal stress and birth outcomes in rural Ghana: sex-specific associations. BMC Pregnancy and Childbirth. 2019 Dec 1;19.

22. Tandu-Umba B, Dedetemo DK, Mananga GL. Maternal Stress and Pregnancy Outcomes. Open Journal of Obstetrics and Gynecology. 2014 May 12;4(7):361–70.

23. Pantha S. Prevalence of Stress among Pregnant Women Attending Antenatal Care in a Tertiary Maternity Hospital in Kathmandu. Journal of Women's Health Care. 2014 Jan 1;03(5).

24. Gariepy AM, Lundsberg LS, Miller D, Stanwood NL, Yonkers KA. Are pregnancy planning and pregnancy timing associated with maternal psychiatric illness, psychological distress and support during pregnancy? Journal of Affective Disorders. 2016 Nov 15;205:87–94.

25. Boakye-Yiadom A, Shittu S, Dutt J, Dapare P, Abass A. Perceived stress and anxiety among Ghanaian pregnant women. Journal of Medical and Biomedical Sciences. 2015 Dec 17;4:29.

26. S RH, C RPT, Awati M. Impact of maternal stress on outcome of new born. International Journal of Contemporary Pediatrics. 2018 Apr 20;5(3):928–32.

Figures

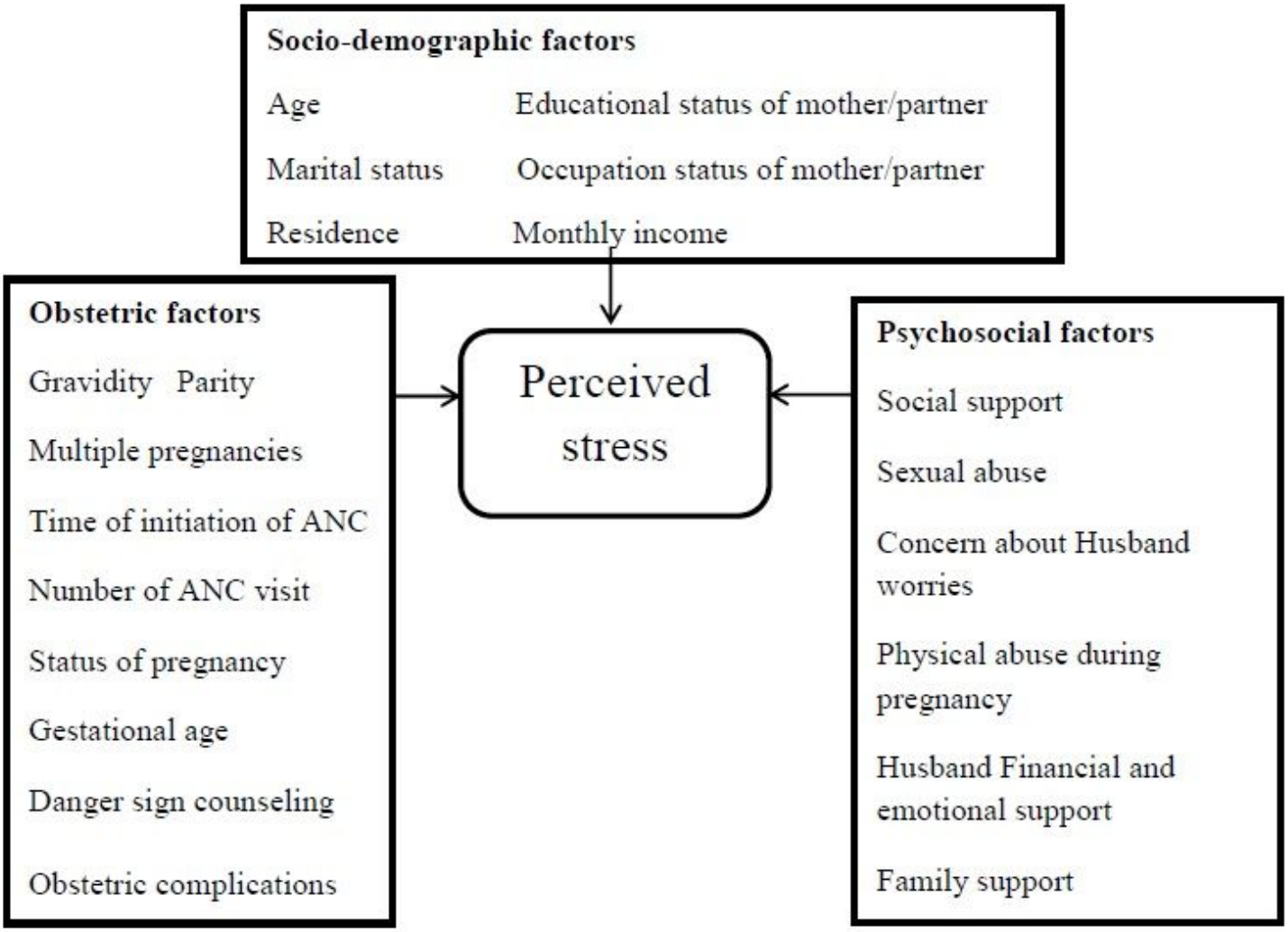

Figure 1

Conceptual framework developed from literatures to assess perceived stress and associated factors among pregnant mothers attending antenatal care at Arba Minch town governmental health institutions, southern Ethiopia, 2020 (7,8,9,10)

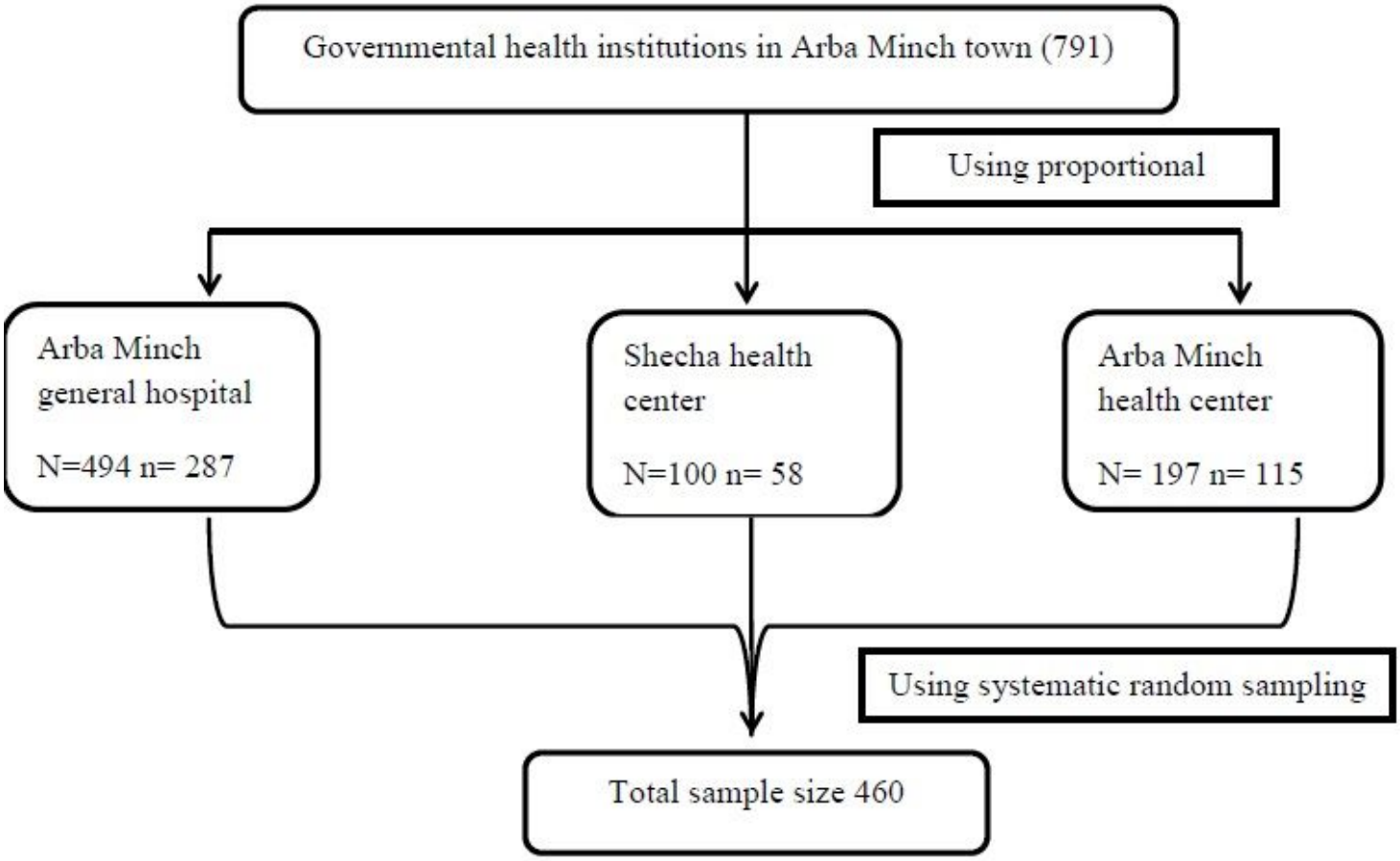

Figure 2

Schematic representation of sampling procedure to assess perceived stress and associated factors among pregnant women attending antenatal care at Arba Minch town governmental health institutions, southern Ethiopia, 2020

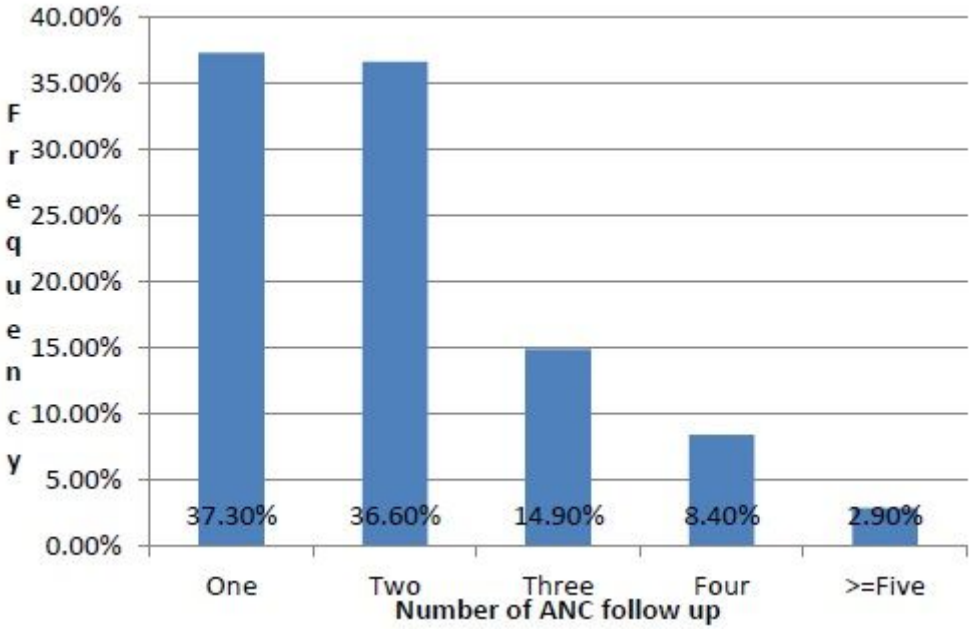

Figure 3

Number of ANC follow up among pregnant women attending antenatal care unit of Arba Minch town governmental health institutions, southern Ethiopia, 2020 (n=451)

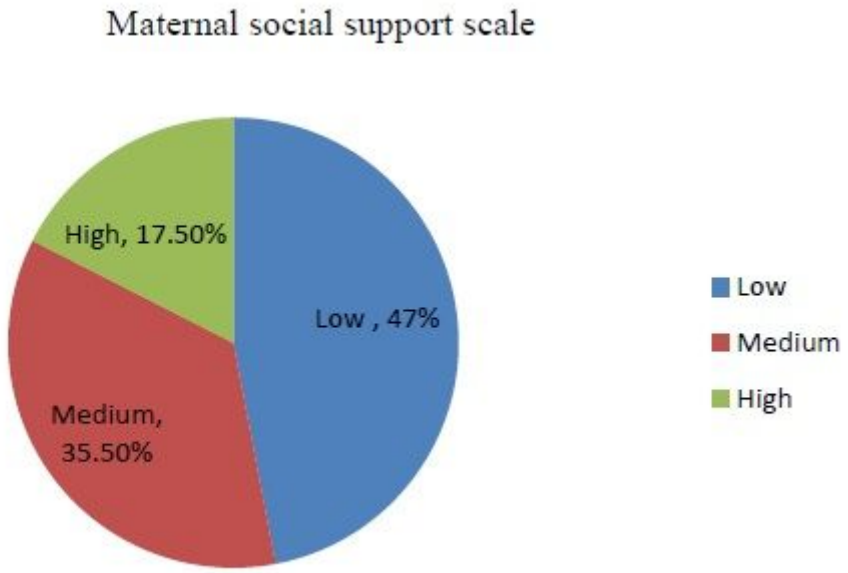

Figure 4

maternal social support scale result among pregnant women attending antenatal care units of Arba Minch town governmental health institution, southern Ethiopia, 2020 (n=451)

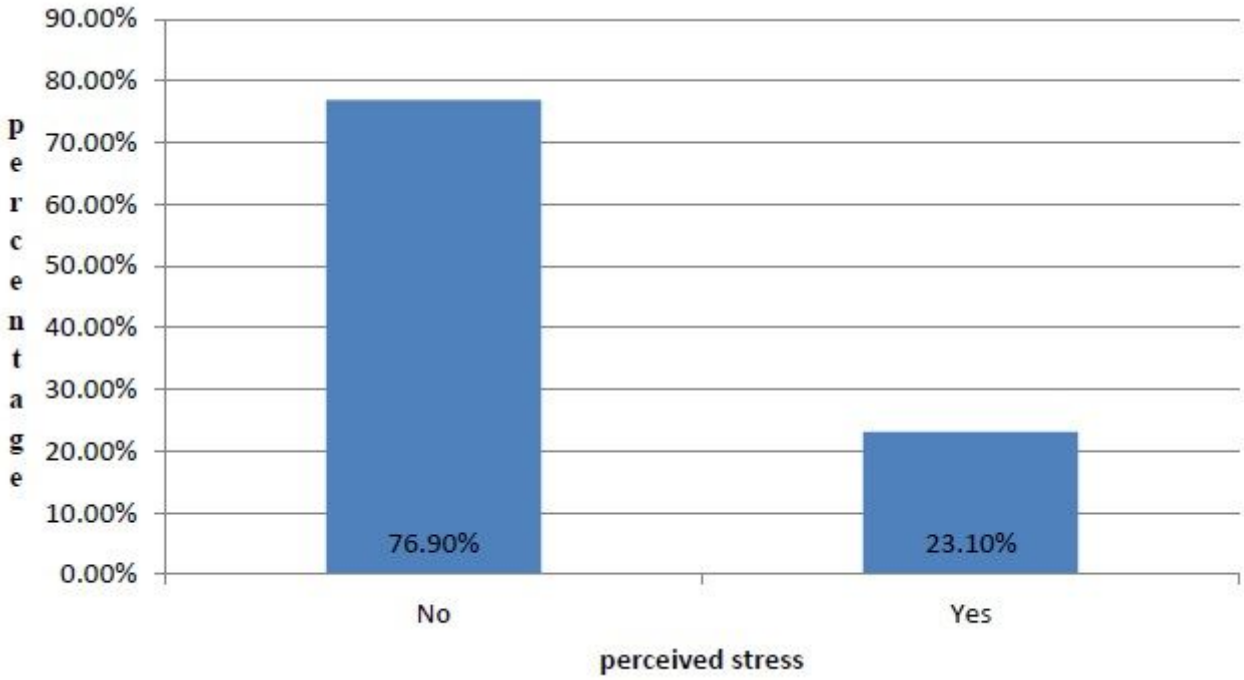

Figure 5

Perceived stress scale among pregnant women attending antenatal care units of Arba Minch town governmental health institution, southern Ethiopia, 2020 (n=451)