COLLEGE OF MEDICINE AND HEALTH SCIENCES

DEPARTMENT OF MIDWIFERY

PREVALENCE AND ASSOCIATED FACTORS OF PREECLAMPSIA AMONG PREGNANT WOMEN ATTENDING ANTENATAL CARE IN DURAME GEVERMENTAL HEALTH INSTITUTIONS, SOUTHERN ETHIOPIA, 2021.

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ABBREVIATIONS AND ACRONYMS

ANC: Antenatal Care

AOR: Adjusted odds ratio

BMI: Body Mass Index

COR: Crude odds ratio

EDHS: Ethiopia Demographic and Health Survey

EMONC: Emergency Obstetric and Neonatal Care

HDP: Hypertensive Disorder of Pregnancy

PE: Pre-Eclampsia

SNNPR: Southern Nation Nationalities and People of Representatives

WHO: World Health Organization

ABSTRACT

Background: Pre-eclampsia is a common problem of pregnancy it often leading to major maternal and fetal complications. The Ethiopian National Emergency Obstetric and Newborn Care (EMONC) showed that pre-eclampsia contributed for the complication of approximately 1% of all deliveries and 5% of all pregnancies. Moreover, 16% of direct maternal mortality and 10% of all maternal mortality (direct and in direct) was due to pre-eclampsia. Despite this condition has adverse effects on maternal and child health, its prevalence is still significant especially in developing countries including Ethiopia.

Objective: The main aim of this study was assess the prevalence and associated factors of pre-eclampsia among pregnant women attending antenatal care at Durame Governmental Health Institutions in Kembata Tembaro zone, Southern Ethiopia, 2021.

Methods: a cross-sectional study design was employed from June14 to July 11, 2021among pregnant women who followed anti natal care at Durame Governmental Health Institutions in Durame town and Systematic random sampling technique was used to select a total of 394 pregnant women's. Data was collected using Semi-structured questionnaire via face-to-face interview technique. Data entry and analysis was made by using EPI-data version 4.6 and SPSS version 25respectively.

Results: The prevalence of preeclampsia among pregnant women in Durame governmental health institutions was found to be 16.5 % with (95% CI 12.7-20.3). The associated factors of preeclampsia were history of multiple pregnancy: 3.102(1.352-7.094), history of rheumatic disease: 4.957(1.992-12.338), history of chronic hypertension: 6.372(2.391-16.893), family history of Diabetes mellitus: 4.803(2.289-10.076) and family history of preeclampsia: 5.187(1.993-13.495)

Conclusion and Recommendations: The finding of this study showed that considerable proportion of women had preeclampsia [(16.5%) (95% CI 12.7-20.3]. The study showed that different factors affect the occurrence of preeclampsia. It is important to give health education in order to make women develop health behavior so they would get chance to detected as early as possible

Key words : ANC, Associated factors, Preeclampsia

CHAPTER ONE- INTRODUCTION

1.1Background

Pre-eclampsia, are also called pregnancy- induced hypertension, it is a life threatening complication of pregnancy, which is typically starts after 20th week of pregnancy and is related to increased blood pressure (BP≥140/90 mmHg) and protein in mother's urine (urinary albumin protein ≥300 mg/24 h), and it affects both the mother and the fetus. Preeclampsia is the driving causes of maternal and perinatal morbidity and mortality. The etiology of pre-eclampsia is still unknown, despite many attempts to identify possible causes. Women with moderate pre-eclampsia generally have no symptoms. Women with severe pre-eclampsia, or with very high blood pressure, may feel unwell, with symptoms such as headache, upper abdominal pain, or visual disturbances [1].

Hypertensive Disorder of Pregnancy (HDP) affect up to 10% of pregnancies worldwide, which includes the 3%-5% of all pregnancies complicated by preeclampsia. It is one of major complications from five major complications that cause about 60% to 80% of all maternal deaths [2]. Life time risk of dying one's women from pregnancy related complications in developing countries is 14 times higher than complications which occur in developed countries [3]. The American High Blood Pressure Education Program Working Group report indicates that about 30% of HPD in that country were due to chronic hypertension and the remaining 70% of case were preeclampsia

Pre-eclampsia is a major cause of maternal mortality (15-20% in developed countries) and morbidity (acute and long-term), perinatal deaths, preterm birth, and intrauterine growth restriction [4]. Pre-eclampsia occurs in an estimated one in 20 pregnancies. From another public health perspective, it is alarming that the rate of pre-eclampsia has increased in worldwide especially in developed countries by 40% the rest is from developing countries between 1990 and 1999 due to an increase in number of older mothers and multiple births, conditions known to increase the risk of pre-eclampsia [5]

The incidence of pre-eclampsia is 2-10%, depending the population studied and definitions of pre-eclampsia [6]. The incidence was 2.8% reported from a study in Israel [7], 5.8% reported from Scotland [8], 14.1% reported from Australia [9] and 5% reported from Seattle. It occurs in 5 to 8 percent of pregnant women worldwide and can cause the most serious problems for the

mother and the child [10]. Despite a steady reduction in maternal mortality from the disorder in more developed countries, it remains one of the most common reasons for a woman to die pregnancy both in developed and developing countries [11]. In developed countries, where maternal mortality attributable to pre-eclampsia has been reduced, the condition primarily affects fetal well-being through intrauterine growth retardation, preterm birth, low birth weight, and perinatal death [12-13]. Adequate knowledge about a disorder contributes greatly to its prevention, control, and management.

1.2 Statement of the problem

Pregnancy is a period in a women's life which may complicated with several factors, from those complications occur at pregnancy preeclampsia is common. Pre-eclampsia occurs in 5–8% of pregnancies worldwide, and is the second leading cause of direct maternal and fetal deaths [14]. The prevalence of pre-eclampsia varies in different populations and in different ethnic groups [15].Pre-eclampsia has remained a significant public health threat in both developed and developing countries contributing to maternal and perinatal morbidity and mortality globally [16].

Hypertensive Disorder of Pregnancy (HDP) is one of the leading causes of maternal mortality and morbidity amongst pregnant women in the world, from those preeclampsia is common [4.17]. Globally, it is the causes of nearly twelve percent of direct maternal deaths [12, 18]. The World Health Organization (WHO) estimates of maternal death due to HDP were 25.7% in Latin-American and Caribbean, and 9.1% in Asian and African countries [19, 20].

WHO estimated the incidence of pre-eclampsia to be seven times higher in developing countries than developed countries, approximately 289,000 women died globally from pregnancy-related causes in 2013, Of which, 99% of deaths occur in developing nations[21]. Sub-Saharan Africa accounts for about 56% of all maternal deaths. A lifetime risk of Women dying from pregnancy-related complications is higher in developing countries than developed countries by 14 folds [13]. A study conducted in Ghana declared that pregnancy induced hypertension has causes for 8.9% maternal mortality [22]. According to 2019 Ethiopia Demographic and Health Survey (EDHS) report, an estimated 412 women per 100,000 live births were dying of pregnancy and related causes [23]. Sixty to eighty percent of all maternal deaths are due to five major

complications namely, postpartum hemorrhage, puerperal sepsis, Hypertension disorder of pregnancy, unsafe abortion and obstructed labor [24].

The Ethiopian National Emergency Obstetric and Newborn Care (EMONC) showed that pre-eclampsia contributed for the complication of approximately 1% of all deliveries and 5% of all pregnancies. Moreover, 16% of direct maternal mortality and 10% of all maternal mortality (direct and in direct) was due to pre-eclampsia [25].A maternal mortality trend analysis showed an increasing trend of pre-eclampsia in Ethiopia [26]. A study done in Western Shoa found that 12.3% maternal mortality occurred from hypertension disorder of pregnancy [27]. This study was aimed to assess the prevalence and associated factors of pre-eclampsia among pregnant women in Durame Governmental Health Institutions.

1.3 Significance of Study

Pregnant women are essential part of the society, understanding their problem, providing good care and solving their problem are important for good outcome of pregnancies to the mother and new born, so work on their problem indirectly contribute to one’s country development.

The finding of this study will have a significant role towards overcoming the problems associated with preeclampsia and which in turn helps to decrease the maternal morbidity and mortality associated with preeclampsia. The finding of this study will also help health care provider to focus on health need of mothers through early detection, informing about preeclampsia before pregnancy, during Antenatal care (ANC) and after delivery. And also it helps to compare the study areas pattern with other areas in Ethiopia and helps to make recommendations based on the study result.

CHAPTER TWO LITERATURE REVIEW

2.1 Prevalence of Pre-Eclampsia

In 2003 WHO reports pre-eclampsia occurs in 7.5% of pregnancies worldwide [18]. The study conducted in Israel reported that the incidence of preeclampsia was 2.8%[7]. 5.8% reported from Scotland [8], and14.1% reported from Australia [9]. In Africa, 10% of pregnancies are complicated with preeclampsia, which is significantly higher than global prevalence approximately by 2% [3]. In Nigeria the prevalence was 16% [28]. According to institutional based cross sectional study done in dessie referral hospital, north east Ethiopia: The prevalence of pre-eclampsia among pregnant women in Dessie referral hospital was found to be 8.4 %. The study done in Arba Minch public health institutions show that the prevalence is about 18.25% [29]

2.2. Factors affecting Pre-eclampsia

2.2.1 Socio Demographic Related factors: Some studies have reported association between age and pre-eclampsia especially in elderly women above the age of 35 years, while others have shown an association of pre-eclampsia with younger age groups. Study conducted in Brazil showed that Advancing maternal age as well as young maternal age is a risk factor for PE, Amongst the complications during pregnancy, pregnancy induced hypertension was commonest complication in elderly primigravidas [30]. A high proportion of pre-eclampsia cases occur in those at the extreme ends of the reproductive age. Women above 40 years had twice the risk of pre-eclampsia, whether they were pimiparous or multiparous women [31]. Shorter maternal height is associated with higher risk of pre-eclampsia. Study conducted in New York showed that strong and consistent relationship between high pre-pregnancy body mass index and pre-eclampsia [32]. Studies have shown that obesity is a definitive risk factor for the occurrence of pre-eclampsia.Sex of newborn: - Mild pre-eclampsia seems to be associated with the carrying of a male fetus which may be due to increased testosterone [33].

2.2.2. Obstetrics History Related Factors

Past history of pre-eclampsia in multiparous women; Mothers who had pre-eclampsia in the first pregnancy are known to be at a substantially higher risk to develop pre-eclampsia in a subsequent pregnancy (32). Multiparous patients with a past history of severe pre-eclampsia are a high risk population which should be identified early in pregnancy [34, 35].

Interval between pregnancies (in years): -A case controlstudies conducted in Armenia showed that long time to pregnancy is associated with pre-eclampsia, supporting the hypothesis that some factors delaying clinically recognized conception may also be in a causal pathway for pre-eclampsia [36].

The risk in a second or third pregnancy was directly related to the time that had elapsed since the preceding delivery, and when the inter birth interval was 10 years or more, the risk approximated that among nulliparous women. After adjustment for the presence or absence of a change of partner, maternal age, and year of delivery, the odds ratio for pre-eclampsia for each one-year increase in the inter birth interval was 1.12. In a cross sectional study, women with more than 59 months between pregnancies had significantly increased risk of pre-eclampsia compared with women with intervals of 18-23 months [37].

Histories of previous abortions: - A studies done in Australia showed that history of abortion in nulliparous women is a protective factor against the risk of pre-eclampsia in the subsequent pregnancy. Multiparous women, both with and without a history of abortion, have a reduced risk of pre-eclampsia compared to nulliparous women with no history of abortion. In another study, having a previous history of a spontaneous abortion was protective but only in multiparous women [38]. Fetal malformations: Pre-eclampsia risk increases with structural congenital anomalies, polyhydramnios, hydropsfetalis, and chromosomal anomalies like downs syndrome and hydrated form moles [47].

2.2.3. Medical Related Factors

Medical history of any autoimmune disease; A studies conducted in Jamaica reveled that women with rheumatic disease had significantly higher rates of pre-eclampsia and cesarean section[38].The relative risk of pre-eclampsia was particularly high in women with connective tissue disease [38, 39]. Gestational diabetes: Gestational diabetes is associated with pre-eclampsia [40]. The rate of pre-eclampsia is influenced by the severity of gestational diabetes. Optimizing glucose control during pregnancy may decrease the rate of pre-eclampsia, even in

those with a greater severity of gestational diabetes. There is accumulating evidence that pre-eclampsia is at least partially mediated by insulin resistance, and that individuals with pre-eclampsia may have clinically silent and persistent alterations in insulin resistance.

However, these findings remain controversial because other studies have not observed a higher frequency of pre-eclampsia in gestational diabetic women, Recognized associations between correlates of insulin resistance and pre-eclampsia show that pre-eclampsia may be part of the spectrum of the insulin resistance syndrome [41].

Medical history of Diabetes mellitus: In women with pre-gestational diabetes, the rates of pre-eclampsia and adverse neonatal outcome increase with increased severity of diabetes. The results of the study showing a relationship between pre-eclampsia and diabetes among Pakistani women is also consistent with other studies' findings. In women with pre-gestational Type 1 diabetes, the rates of pre-eclampsia and adverse neonatal outcome increase with the presence of diabetes [42].

Family history of hypertension and diabetes among first blood relations: the study conducted in Uganda there was consistent findings of a positive association between family history of diabetes and hypertension and pre-eclampsia risk [43]. Family history of hypertension is a proxy measure for hereditary factors as well as common environmental or behavioral exposures that may underlie pre-eclampsia risk. Women's family history of chronic hypertension is an important and easy to acquire clinical risk marker of pre-eclampsia compared to the biochemical markers.

Family history of Pre-eclampsia: In a prim gravida, a family history of pre-eclampsia is associated with a fourfold increased risk of severe pre-eclampsia. This clinical history identifies a group who warrant close clinical surveillance during pregnancy and who may be suitable for trials of prophylactic interventions [42].

Genetic factors are important in the development of pre-eclampsia as well as gestational hypertension. In efforts to identify women with elevated risk of developing pre-eclampsia during pregnancy, a question about family history of pre-eclampsia is important.

The findings from these studies are biologically plausible for reason that epidemiological and clinical data document a close association between insulin resistance, type 2 diabetes, and hypertension [44]. Urinary tract infection during pregnancy may add to the inflammatory burden of a pregnancy and trigger pre-eclampsia in susceptible women [45].

2.2.4. Partner-related factors:

Change in partner (Prim paternity: pregnancy with new father): The term prim paternity was introduced by Robillard et al. According to this theory, pre-eclampsia may be a problem of primipaternity rather than primigravidity. The control of placentation may well have an immunological basis with an interaction occurring between maternal and fetal genes, this could explain why women are more at risk of pre-eclampsia in their first pregnancy and why parous women who later conceive by a new partner also have an increased susceptibility to the syndrome [46].

Many studies confirm that change of partner raises the risk for pre-eclampsia in subsequent pregnancies.The inter-pregnancy interval, which is strongly associated with change of partner, may confound or modify the paternal effect on pre-eclampsia [46]. The very high incidence (24%) of pre-eclampsia among new paternity multiparous women was shown to be related to remarkably short period of sperm exposure preceding conception. Multi gravid women with a period of unprotected sexual cohabitation of longer than 6 months had a decreased risk of pre-eclampsia [47, 48].

2.2.5. Exogenous factors

Studies conducted in Brazil and Great Britain show that cigarette smoking was no association with a pre-eclampsia[49].However, a study conducted in Latin America reviled that cigarette smoking during pregnancy was protective effect against development of preeclampsia , but smoker with preeclampsia have markedly increase rate of low birth weight ,small weight for gestational age , perinatal mortality ,and placental abruption when related with nonsmoking preeclampsia [50].Stress & Working women status: (Work-related psycho-social strain): Work related stress is also a risk factor for pre-eclampsia.Working women had 2.3 times the risk of developing pre-eclampsia compared with nonworking women. Epidemiological studies show that relative risk for pre-eclampsia is increased in many stressful situations. Many risk factors for Pre-eclampsia is stress related. Low-stress situations, on the contrary, are protective. Stress in pregnancy corroborates all physic-pathological theories for pre-eclampsia [51].

2.2.6. Conceptual Framework

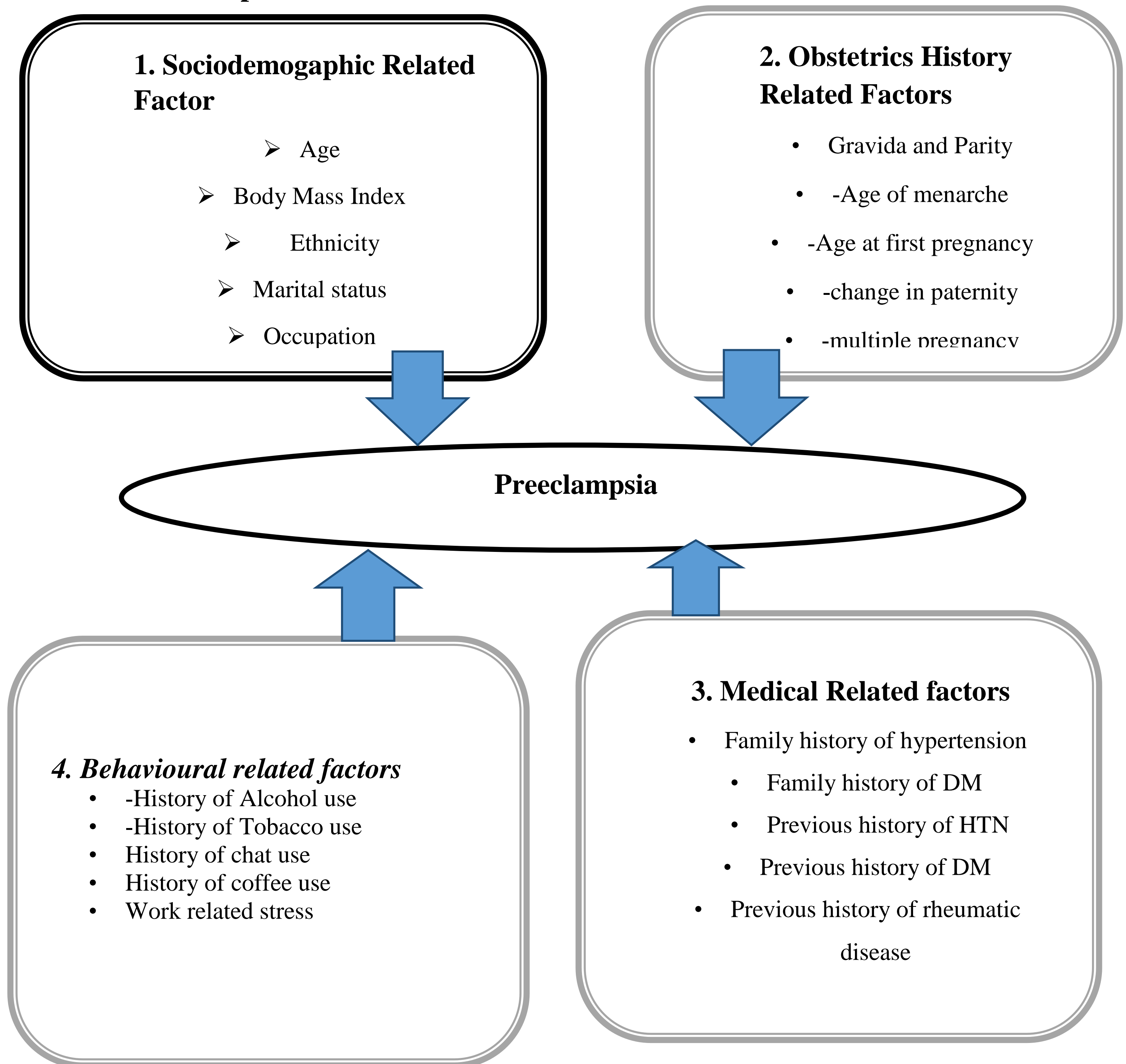

Figure 1:-Conceptual frame work shows relationship of independent variables with dependent variable, Kembata tembaro zone, Durame town, Ethiopia, 2021.

CHAPTER THREE -OBJECTIVE

3.1 General Objective

- To assess the prevalence and associated factors of pre-eclampsia among pregnant women attending antenatal care in Durame Governmental Health Institutions, in Ethiopia, 2021.

3.2. Specific Objectives

- To determine the prevalence of pre-eclampsia in Durame Governmental Health Institutions.
- To identify factors associated with pre-eclampsia in Durame Governmental Health Institutions.

CHAPTER FOUR-METHODS

4.1. Study area

The study was conducted in Durame governmental health institutions, Kembata Tembaro Zone, Ethiopia. Kembata Tembaro has a total population of 962,815. Durame is the administrative center of Kembata Tembaro Zone of the SNNPR which is about 335km South-West of Addis Ababa and 125km far from Hawassa. Durame town has a total population of 39,459 of whom 51% are female and 49% are male. The town has organized by eight woredas.

And also the town has three public health institutions,one general hospital and 2 health centers, and those health institutions provide well organized services for the people in the town including maternity and child care like Ante natal care, Labor and Delivery, postnatal careand EPI. Majority of the population follow the protestant religion but there are peoples who follows religion other than protestant.

4.2. Study design and Period

Institutional based cross-sectional study design was conducted from Jun 14-July 11.

4.3. Source of population

The source of population for this study were all pregnant women who were on antenatal care follow up in Durame Governmental Health Institutions.

4.4. Study population

Those sampled pregnant women who had antenatal care follow up in Durame Governmental Health institutions at the time of study.

4.6. Eligibility criteria

4.6.1. Inclusion criteria

Pregnant women who attended ANC service and with gestation age greater than 20 weeks and those who are not chronically ill.

4.5.2. Exclusion criteria

Pregnant women who had known chronic hypertension and seriously ill were excluded.

4.7. Sample size determination

394 pregnant women were selected by Systematic random sampling method (SRSM) method. Total sample sizes to be taken were determined by using single population proportion formula with 95% confident interval and marginal error (d) of 4%.

$$n=\frac{z^2 x\ p\ (1-p)}{d^2}$$

Where

n=desired sample size of the population.

z= standard deviate usually 1.96 which corresponds with 95% confident interval

p=proportion of target population to have the particular characteristics under study done in Arbamnch (18.25%) [29]

d=degree of accuracy usually 0.04

$$\frac{1.96^2 xo.1825x0.8175}{0.o4^2}= 358$$

10% of 358 =36

Non-response rate 10%=36

The total number was: - 358+36=394

4.8. Sampling techniques

Systematic random sampling procedure was applied to select the study subjects from all pregnant women in ANC follow up at public health facilities. We first determined k value by monthly plane of each facility. The K value was calculated as; total population (627) divide by sample size (394), we got two (2). Then the first mother was randomly selected based on her arrival at the facility and every K^{th} women was taken into the study until the required number of study participants was reached.

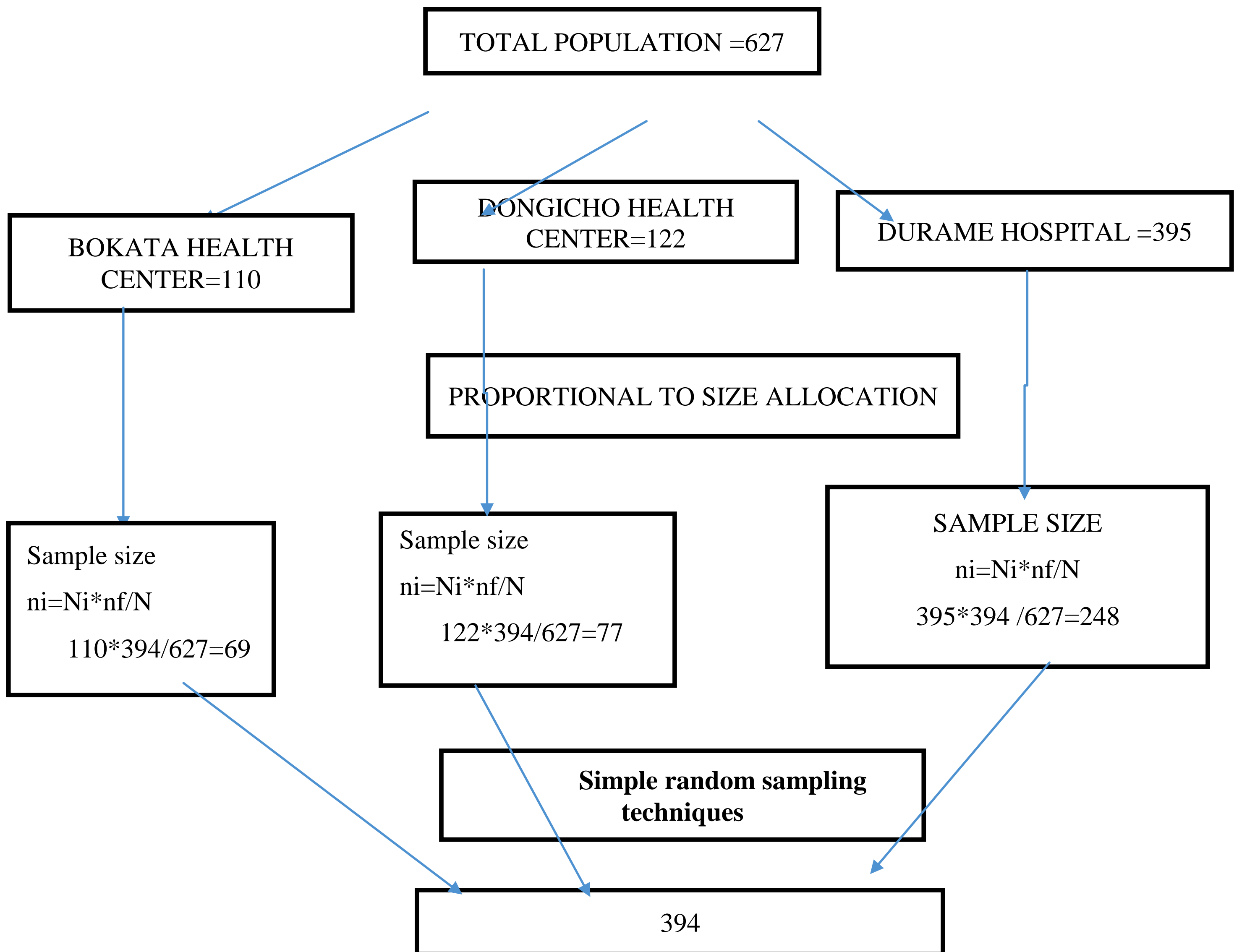

Figure 2:-Schematic presentation of sampling procedure to select study participants, Kembata tembaro zone, Durame town, Ethiopia, 2021.

4.8. Study variables

4.8.1. Dependent variables: -

- Pre-eclampsia

4.8.2. Independent variable: -

- **Socio demographic Factors:**
  - ✓ Age
  - ✓ Residency
  - ✓ Ethnicity
  - ✓ Marital status
  - ✓ Occupation
  - ✓ Income
- **Obstetrics history related factors:**
  - ✓ Gravidity, parity, change in paternity
  - ✓ Time period between pregnancy
  - ✓ previous pre-eclampsia
  - ✓ Family history of pre-eclampsia
  - ✓ Multiple pregnancy
  - ✓ History of abortion
- **Medical related factors:**
  - ✓ Preexisting medical conditions:
  - ✓ Diabetes Mellitus
  - ✓ Chronic hypertension
  - ✓ Renal disease
  - ✓ Autoimmune disease
- **Behavioral related factors:**
  - ✓ Alcohol use
  - ✓ Tobacco use
  - ✓ Coffee use
  - ✓ Work related stress

4.9. Operational Definition

- **Pre-eclampsia:** is defined as gestational hypertension [systolic blood pressure (SBP) ≥140 mm Hg and/or diastolic blood pressure (DBP) ≥90 mmHg] on two separate readings taken at least four to six hours apart after 20 weeks of gestation in an individual with previously normal blood pressure and proteinuria in pregnancy(1).
- **Proteinuria:** is assessed using the urine dipstick method. Those women levels of +1 and above are classified as having proteinuria (1).
- **Gestational age**: is calculated from the last normal menstrual period (LNMP) and for those women who didn't recall their last menstrual period, fundal height and/or ultrasound result was used. [52]
- **BMI (Body Mass Index):** is a measure of body fat based on weight and height of a person. It is calculated as weight (Kg) divided by height square (M^2). This implies BMI = Wt/ $(Ht)^2$ = Kg/M^2. [53]

4.10. Data Collection Instrument and Procedure

4.10.1. Data Collection Instrument

The data was collected through measurement and structured interviewer-administered questionnaire. The measurement included blood pressure, weight, height and urine of women. They were interviewed about their socio-demographic characteristics, medical factors, obstetric factors and behavioural factors by trained and experienced health professionals immediately before and/or after ANC services. The questionnaire was prepared by reviewing different literatures including, WHO and other documents which related to preeclampsia. some questions were adopted from questionnaires used in other studies to investigate the risk factors of preeclampsia.

Height and weight measurements were taken. Weight of the women was measured in kilogram and height was measured in centimetre while the women were in standing position. Then it was classified based on the World Health Organization (WHO) standards of BMI

Blood pressure was measured while the women seated in the upright position using a mercury sphygmomanometer apparatus. Before taking the measurement, the participants were allowed to take rest for 5 minutes. The measurement was taken from participant's right hand which covers two-thirds of the upper arm. Standard mercury sphygmomanometer was used throughout the

study to minimize measurement error. To ensure its accuracy the apparatus was checked by measuring other data collector's blood pressure. The cuff inflated at a rate of 2–3 mmHg per second. Second BP measurement was taken after 4hours. If the second measurement becomes ≥ 140/90 mmHg, then she was checked again after 4 hours to confirm the diagnosis

Data regarding proteinuria was taken from the women's medical records or midstream urine sample was taken if no previous record. Then proteinuria was assessed using urine dipstick method and part of the routine investigation for all pregnant women during the study period.

4.10.2. Data Collection Procedure

Structured questionnaires were used for data collection. The calculated sample size was used to take the study subjects from the post-natal unit. Three fourth-year midwifery students were selected to collect the data and one BSC midwives was selected as a supervisor. The selected data collectors and supervisor were trained on the topic, objective and benefit of the study and on individual's right, informed consent and techniques of the interview for two days prior to study.

4.11. Data Quality Control Issues

The qualities of dates were controlled starting from the time of questionnaires preparations. And the data is prepared by group investigators. First the questionnaire which is prepared in English will be translated into Amharic. To in/sure the consistency of the tool it was translated back to English. Training was given for supervisor and data collectors on the topic and purpose of the study, on how to approach study subjects and procedures of data collection for two days prior to the study. After completing the training, trainees were conducted a pre-test at non-study health facility. The collected data were checked out for the completeness, accuracy, and clarity by the principal investigator and supervisor. This quality checking was done daily after data collection and correction were made before the next data collection measure. Data clean up and cross-checking was done before analysis.

And also data collectors and supervisor were given training on how to approach the participants and perform measurements. The performances of the instruments were checked and measurement tools monitoring were done. Participants were asked to remove tight outer-wearing and shoes. Blood pressure measurement was taken by one midwife to avoid the inter-observer bias. The supervisor and the principal investigator was checked questionnaires on daily basis for in consistence

4.12. Data Processing and Analysis

After data collection the data was coded, entered and cleaned using EPI-data version 4.6 software. And analyzed using SPSS Version 25 software. Descriptive statistics were used to explore the data in relation to relevant variable. Binary logistic regression was used to assess the association between the dependent variable and independent variables. Then variables with P-value less than or equal to 0.2 were fitted to multiple logistic regression. The predictive ability of the model was tested with Homers-Lemeshow goodness-of-fit test. Finally, variables with P-value less-than or equal to 0.05 were considered as factors associated with pre-eclampsia.

4.13. Ethical Considerations

To conduct this research project, ethical approval was secured from Wolkite University College of medicine and health sciences department of midwifery. Next, Official letters were submitted to Regional Health Bureau and then to Durame town Health Bureau and finally written permission was obtained from Durame Governmental Health Institutions. During data collection process the data collectors were informed each study participants about the purpose and anticipated benefits of the research project and the study participants were also informed on their full right to refuse, withdrawal or completely reject part in the study and they were assured that their treatment and other benefits they gain from the hospital and /or other organizations didn't influenced by their participation in the study. Finally, they were asked for their verbal informed consent to participate or not to participate in the study and for their willingness on use of their files and records for the study. Assessment and measurements were conducted in quit, ventilated lighted room to respected the participants, privacy and increase their confidence on the study.

CHAPTER 5: RESULT

5.1. Socio-demographic characteristics of the study participants

From the total participants 192(48.7%) were found in the age range of 20-29 years. The mean age of the study participants was (29) years (SD=5).Most 381(96.7%) of the study participants were married. Majority of the study participants 322(81.7%) were Protestant followers and the majority 251(62.9%) of the study participants identified kembata as their ethnic origin. (**Table 1**)

Table 1: - Socio-demographic characteristics of the study participants, Kembata Tembaro zone, Durame town, Ethiopia, 2021.

Variables	Category	Frequency	Percentage
Age(years)	<20	17	4.3
	20-29	192	48.7
	30-39	175	44.5
	40-49	10	2.5
Marital status	Currently Married	381	96.7
	Currently Unmarried	13	3.3
Religion	Protestant	322	81.7
	Orthodox	66	16.8
	Muslim	6	1.5
Residency	Urban	259	65.7
	Rural	135	34.3
Ethnicity	Kembata	248	62.9
	Hadya	109	27.7
	Oromo	10	2.5
	Amhara	11	2.8
	Wolayita	16	4.1
Educational level	Unable-to-read-and-write	31	7.9
	Read-and-write	51	12.9
	Primary-school	136	34.5
	Secondary-school	91	23.1
	College and above	85	21.6
Occupation	Government-employee	106	26.9
	Private-employee	62	15.7
	Merchant	102	25.9
	House-wife	124	31.5
Monthly income	<2500	16	4.1
	2500-5000	143	36.3
	5000-7500	164	41.6
	>7500	71	18.0

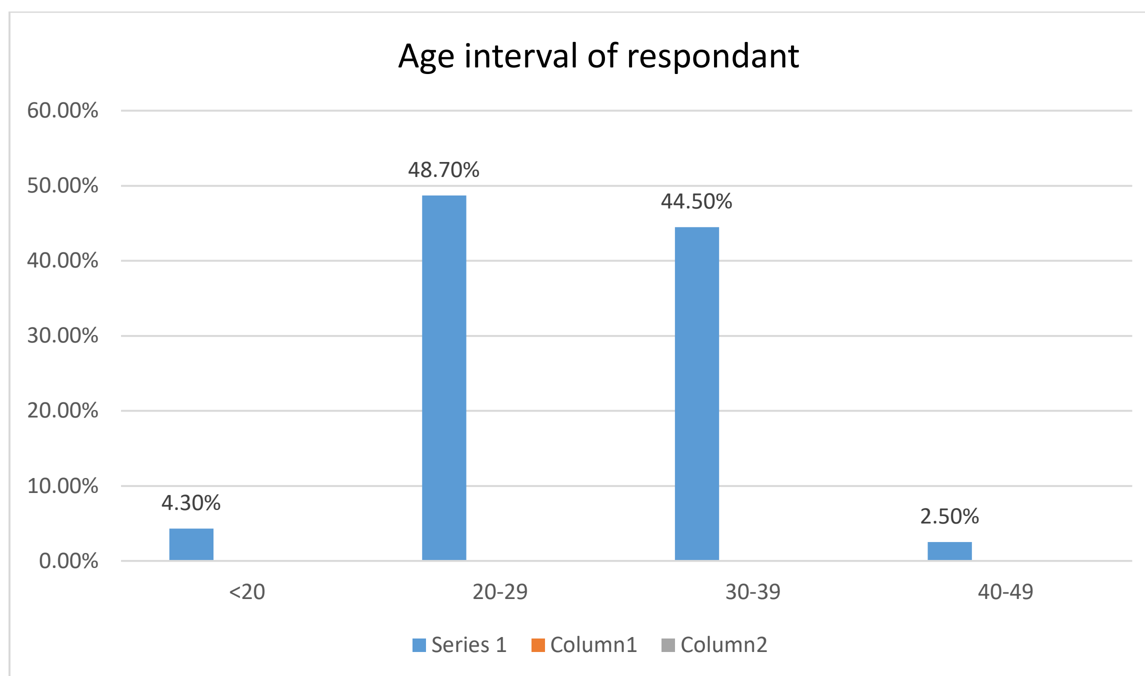

Figure 3:- Frequency distribution of age of study participants, Durame town, Ethiopia, 2021.

5.2. Reproductive and obstetric characteristics of women

Among women who attended ANC in Kembata Tembaro zone Health institutions,301(76.4%) started menstruating at the age of 13-14 years .concerning the first age of pregnancy ,all the participant became pregnant below 35 years. Nearly half 210(53.3%) of study participants were found between gravida 2-4. Almost half 196(49.7%) of the participants were multiparous. Similarlyabout 21.8% of the participants had history of abortion. Regarding infertility, about 21(5.3%) of them had history of infertility. The BMI of almost half (49.7%) of participants were found between 18.5-24.99.While 65(16.5%) of them developed preeclampsia with the current pregnancy (**Table 2**).

Table 2:-Reproductive and obstetric characteristics of study participants, Kembata tembaro zone, Durame town, Ethiopia, 2021.

Variables	Category	Frequency	Percentage
Age of menarche(in years)	≤12	61	15.5
	13-14	301	76.4
	≥15	32	8.1
Age at first pregnancy	<35	394	100.0
Gravidity	gravidity 1	101	25.6
	gravidity 2-4	210	53.3
	gravidity≥5	83	21.1
Parity	0	108	27.4
	1	90	22.8
	≥2	196	49.7
History of abortion	Yes	86	21.8.
	No	308	78.2
Current ANC visit	1st-visit	35	8.9
	2nd-visit	126	32.0
	3rd-visit	185	47.0
	4th-visit	48	12.2
History of institutional delivery	Yes	280	71.1
	No	114	28.9
Time period b/n pregnancy(in year)	<3	348	88.3
	≥3	46	11.7
Change paternity after previous pregnancy	Yes	29	7.4
	No	365	92.6
History of infertility	Yes	27	6.9
	No	367	93.1
History of multiple pregnancy	Yes	51	12.9
	No	343	87.1
BMI	≤18.5	7	1.8
	18.5-24.99	193	49
	25-29.99	161	40.9
	≥30	33	8.4
Pre-eclampsia	Yes	65	16.5
	No	329	83.3

5.3. Medical related factors

From three hundred ninety four participants about 14.5% of them were history of Rheumatic disease. And also, (7.6%), (8.9%), and (7.9%) of them were history of chronic hypertension, DM, and preeclampsia respectively. About (24.9%), (16. 2%), (16.0%), and (7.1%) had family history of hypertension, DM, renal disease, and preeclampsia respectively (**Table 3**).

Table 3:-Medical related factors of study participants, Kembata tembaro zone, Durame town, Ethiopia, 2021.

Variables	Category	Frequency	Percentage
History of Rheumatic disease	Yes No	57 337	14.5 85.5
History of chronic hypertension	Yes No	30 364	7.6 92.4
History of diabetes mellitus	Yes No	35 359	8.9 91.1
History of preeclampsia	Yes No	31 363	7.9 92.1
Family history of hypertension	Yes No	98 296	24.9 75.1
Family history of DM	Yes No	64 330	16.2 83.8
Family history of renal disease	Yes No	63 331	16 84
Family history of preeclampsia	Yes No	28 366	7.1 92.9

5.4. Behavioral related characteristics

From the total women of the study, 3 (0.8%) were tobacco smokers and the rest had no habit of smoking. About 64 (16.2%) of the study participants were drinking alcohol, while the rest 330 (83.8%) didn't. of the participants (3%) were chat user, and about 283 (71.8%) were drinking coffee. About 105 (26.6%) of them had stress related to their work. (Figure 4).

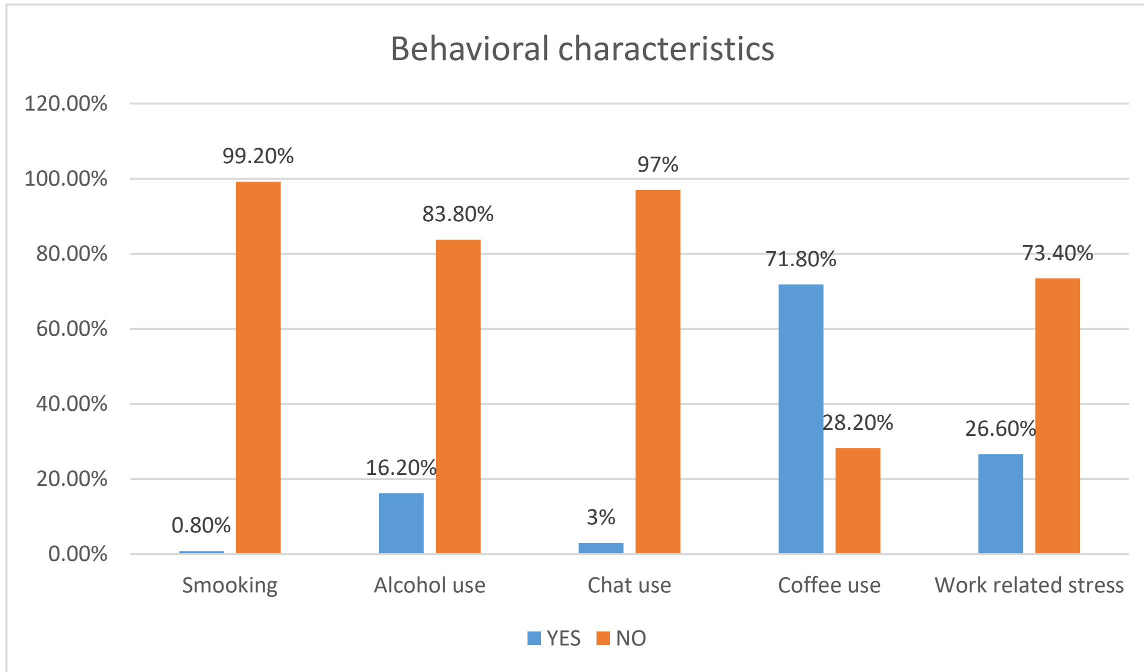

Figure 4:- Behavioral related characteristics of study participants Kembata tembaro zone, Durame town, Ethiopia, 2021.

5.5. Factors associated with preeclampsia

Logistic regressions were done to identify factors that have significant association with preeclampsia. In bivariate analyses; maternal age, occupation, education, paternity, parity, twin pregnancy, family history of hypertension &DM, renal disease, and preeclampsia, alcohol use and stress were candidate variables for multivariable logistic regression analysis at P- values of less than 0.25.The result of multivariable analysis showed that history of multiple pregnancy, history of rheumatic disease, history of chronic hypertension ,family history of hypertension, family history of DM ,and family history of preeclampsia were the factors associated with preeclampsia at a P-value < 0.05.

The odds of preeclampsia were 3.102[AOR=3.102(95% CI: 1.356-7.094)] time higher among the women with history of multiple pregnancy than women who hadn't history of multiple pregnancy. The odds of preeclampsia were 4.957[AOR=4.957(95% CI: 1.992-12.338)] time higher among women who had history of rheumatic disease than women who hadn't history of rheumatic disease. The odds of preeclampsia were 6.372[AOR=6.372(95% CI: 2.391-16.893)] time higher among women history of chronic hypertension than women who hadn't history of chronic hypertension. The odds of preeclampsia were 6.324 [AOR=6.324(95% CI: 3.057-13.083)] time higher in women who had family history of hypertension than who hadn't. The odds of preeclampsia were 4.803 [AOR= 4.803(95% CI: 2.289-10.076)] time higher among a woman who had family history of DM than who hadn't. The odds of preeclampsia were 5.187 [AOR=5.187(95%CI: 1.993-13.495)] time higher among women who had family history of preeclampsia than who hadn't (Table 4).

Table 4:- Factor associated with preeclampsia, kembata tembaro zone, Durame town, Ethiopia, 2021.

Variable	preeclampsia		OR(95%CI)		p-value
	Yes	No	COR (95%)	AOR (95%)	
Age in year					
<20	6	11	1.222(0.244-6.11)	1.366(0.284-6.576)	0.807
20-29	22	170	5.152(1.348-19.690)	0.629(0.154-2.574)	0.118
30-39	33	142	2.869(0.766-10.745)	3.529(0.668-18.643)	0.530
40-49	4	6	1	1	
Gravidity					
gravidity 1	16	85	1.269(0.591-2.722)	0.948(0.77-11.619)	0.541
gravidity 2-4	33	177	2.546(1.137-5.702)	1.504(0.516-4.383)	
gravidity≥5	16	67	1	1	
Parity					
0	18	90	1.242(0.671-2,229)	0.572(0.058-5.665)	0.541
1	8	82	2.546(1.137-5.702)	1.156(0.273-4.892)	0.462
≥2	39	157	1	1	
History of abortion					
Yes	17	69	1.335(0.723-2.465)	2.112(0.4321-2.320)	0.357
No	48	260	1	1	
History of institutional delivery					
Yes	43	237	1.318(0.747-2.324	3.103(0.552-4.302)	0.32
No	22	92	1	1	

Change paternity after previous pregnancy					
Yes No	5 60	24 305	1.059(0.389-2.886) 1	5.423(0.321-3.023) 1	0.43
History of infertility					
Yes No	6 59	21 308	1.492(0.577-3.853) 1	4.332(0.231-4.221) 1	0.56
History of multiple pregnancy					
Yes No	14 51	37 292	**2.166(1.094-4.290)** 1	**3.102(1.356-7.094** 1	**0.007**
BMI					
<=18.5 18.5-24.99 25-29.99 >=30	4 25 25 11	3 168 136 22	0.375(0.071-1.978) 3.36(0.445-7.759) 2.72(0.74-6.30) 1	0.684(0.062-7.598) 3.429(0.885-13.284) 4.035(1.076-15.125 1	0.248 0.053 0.07
Educational level					
unable-to-read-and-write read-and-write primary-school secondary-school College and above	12 9 20 16 8	19 42 116 75 77	0.165(0.59-1.459 0.485(0.174-1.350) 0.603(0.2531.437) 0.487(0.197-1.205) 1	0.72(0.015-0.346) 0.304(0.68-1.359) 0.415(0.120-1.434) 0.339(0.086-1.345) 1	0.21 0.16 0.25 0.12
Time period b/n pregnancy(in year)					
<3 >=3	58 7	290 39	0.897(0.383-2.105) 1	9.353(2.403-36.402) 1	0.804
history of Rheumatic disease					
Yes No	16 49	41 288	**2.294(1.195-4.404)** 1	**4.957(1.992-12.338)** 1	**0.001**
history of chronic hypertension					
Yes No	12 53	18 311	**3.912(1.782-8.588)*** 1	**6.372(2.391-16.893)** 1	**0.001**
history of DM					
Yes No	9 56	26 303	1.873(0.8330-4.210) 1	2.297(0.860-6.68) 1	0.360

history of preeclampsia					
Yes No	15 50	16 313	0.170(0.79-1.366) 1	1.52(0.562-3.554) 1	0.06
Family history of hypertension					
Yes No	**30** **35**	68 261	**4.478(2.568-7.807)** 1	**6.324(3.057-13.083)** 1	**0.001**
Family history of DM					
Yes No	24 41	40 289	**4.229(2.315-7.726)** 1	**4.803(2.289-10.076)** 1	**0.001**
Family history of renal disease					
Yes No	18 47	45 284	**0.414(0.221-0.775)** 1	**3.368(1.588-8.566)** 1	**0.06**
Family history of preeclampsia					
Yes No	11 54	17 312	**3.739(1.661-8.417)** 1	**5.187(1.993-13.495** 1	**0.001**
Alcohol use					
Yes No	14 51	50 279	1.532(0.789-2.974) 1	1.593(0.668-3.803) 1	0.245
Coffee use					
Yes No	53 12	230 99	0.526(0.269-1.027) 1	1.270(0.560-2.880) 1	0.06
Work related stress					
Yes No	25 40	80 249	1.945(1.112-3.404) 1	1.448(0.686-3.056) 1	0.124

6. DISCUSSION

Preeclampsia is a disorder of pregnancy characterized by high blood pressure and a significant amount of protein in the urine. It is one of the major causes of maternal mortality worldwide. This study attempted to examine the prevalence and factors associated to preeclampsia based on a sample of 394 pregnant women who had ANC follow up at Durama governmental health institutions. The finding of this study indicates that 65 (16.5%) withCI (95% 12.7-20.3) of pregnant women has preeclampsia on their current pregnancy. This finding is higher than the study done by WHO (7.5%) [18]. This might be due to different in geographical area, poor economic status and study period. This finding also higher than the study done in Israel (2.8%) [7], and the study conducted in Scotland (5.8%) [8]. This might be due to different geographic area, study period and variation in economic status. This finding was in line with study conducted in Australia (14.1%) [9], the study conducted in Nigeria (16%) [28], and the study conducted in Arba Minch public health institutions (18.25%) [29]. This prevalence is lower than the prevalence reported by India (28. 7%) [54].The reason might be due to the study conducted in India encompass large number of study participants, it covers large geographic area and it might be due to study conducted in different study period [54]. This finding also lower than the study conducted in Jimma University Referral Hospital [55], and the study conducted in Black Line Hospital [56]. The difference might be due to time gap, different in geographic and due to place of residence. The two studies; the study conducted in Jimma University Referral Hospital and the one which was conducted in Black Lion Hospital; took their study participants from urban areas. But in our case some of the participants were rural dwellers.

According to the finding of the current study revealed that the odds of developing preeclampsia are higher in women with rheumatic disease. A similar finding was reported from the study done in Jamaica [38] Brazil [30], and ArbaMinch [29]. Those women with history of chronic hypertension had greater odd of developing preeclampsia. This finding is in line with study conducted in Brazil [38], Uganda [43], and also study conducted in Arba Minch [29]. This might occur due to in pregnant women with chronic hypertension increase the hemodynamic instability.

Those women with family history of hypertension had higher rate of developing preeclampsia compared with women who haven’t. This finding is in line with study conducted in Brazil [30],

Pakistan [42], and Uganda [43]. This might be due to family history of hypertension is proxy measure for hereditary factors may underlie preeclampsia risk.

Those pregnant women with family history of diabetes mellitus had higher rate of developing preeclampsia than those women who haven't family history of diabetes mellitus. This finding is in line with the study conducted in Pakistani [42], Arba Minch [29]. This may be preeclampsia is a part of the spectrum of insulin resistance syndrome [41]. Those with family history of preeclampsia has higher rate of developing preeclampsia than those women who haven't. This finding was in line with the study done in Australia [9] Pakistan [42], and Uganda [43]. This might be due to genetic factor affect the occurrence of preeclampsia. Regarding the relation of preeclampsia with multiple pregnancies those who had history of multiple pregnancy are three time more odds of developing preeclampsia than those who hadn't. This finding was in line with the study done in some developed countries like Ireland [34] and the study conducted in Uganda [43].

This study also shows that women with family history of renal disease had three-time risk of developing preeclampsia than women who haven't. This finding was in line with the study conducted in England [43], in Australia [46]

However unlike other literature, older age, educational status, gravidity, history of infertility, history of abortion, history of institutional delivery, alcohol use and smoking status was not significant in this study. This might be due to the presence of few number women in these categories .The current study has some limitations. First, it may have recall bias regarding some factors such as time of menarche and age at first pregnancy. Secondly, biochemical tests had not been done for exclusion of women with other chronic diseases.

7. CONCLUSION AND RECOMMENDATION

7.1 Conclusion

The prevalence of preeclampsia in this hospital was higher than other similar studies. Having personal and family history of hypertension, having personal history of rheumatic disease, family history of hypertension, family history of diabetes mellitus and family history of preeclampsia were significantly associated with preeclampsia

7.2. Recommendation

7.2.1. For pregnant women

Pregnant women have better to visits health institutions during their pregnancies and it is better to seek advice from health provider.

8.2.2. For health provider

Health professionals particularly who are doing in maternity room should provide appropriate and compressive care for pregnant women's. They should also alert for pregnant women who have family history of hypertension, family history of diabetes mellitus, family history of preeclampsia, previous history of rheumatic disease, and previous history of multiple pregnancy.

8.2.3. For researchers

Researcher better to focus on this maternal complication to find other possible causes of preeclampsia using more strong study design such as cohort and experimental designs with larger sample size .the future studies should try to include large population encompassing pregnant women in the community.

8.2.4. For the Ethiopian government

The government is better to give emphasize and consider this maternal complication as one focus area of sustainable development goal to reduce its consequences both on women and their children .Health extension workers also should be aware of preeclampsia to provide counseling and other protective measure in the community.

8.2.5. For non-governmental organization (NGOs)

Non-governmental organization which are doing on maternal and reproductive health better to focus their financial and technical support as well as collaboration with other organizations to reduce and prevent this maternal complication.

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.

ANNEX 1: INFORMATION SHEET AND CONSENT FORM

Dear participant: -

This study is proposed to assess prevalence and associated factors of pre-eclampsia among pregnancy women attending ANC in Durame Governmental Health institutions and you are chosen to participate in this study. The purpose of this study is to generate information about prevalence and identifying risk factors of pre-eclampsia. The outcome of the study might help the concerned bodies to take actions based on the findings. In order to effectively attain the objective, we are asking your help. Here is a questionnaire for you to complete and there is no need to put your name on the questionnaire; no Individual responses will be reported. Your answers are completely confidential. It is your full right to refuse to answer any or all of the questions. However, your honest answers to these questions will help us in better understanding of prevalence and associated factors of pre-eclampsia in this community; we request your truthful and keep participation. Please take a few minutes to answer to the questions.

Are you willing to participate?

_________ Yes, I want to participate in the study (Please go to the next page).

_________ No, I don't participate in the study (Thank you very much!)

/

ANNEX 2: QUESTIONNAIRE

Socio - Demographics characteristics of women

1	How old are you?	
2	What is your marital status?	1.Married 2.Unmarried 3.Divorced 4.Separated
3	Religion	1.Protestant 2.orthodox 3.Muslim 4Other………………..
4	Residency	1. Urban 2. Rural
5	Ethnicity	1.Kembata 2.Hadiya 3.Oromo 4.Amhara 5.Wolayita 6. Others………………..
6	Educational level	1.Read and write 2.Primary education 3.Secondary education 4.College 5.University
7	Occupation	1.Government employee 2.Private employee 3.Merchant 4.Housewife 5. Other………………
8	Monthly Income	…………………………

Reproductive and obstetric characteristics of women

	Variables	Alternatives
9	What's your age of menarche (in year)?	………………………..
10	What's the age at 1st pregnancy?	....
11	How many gravidity you have?	…………………………
12	How many parity you have?	……………………….
13	Having history of abortion?	1.Yes 2.No
14	Do you remember your LNMP?	1.Yes 2.No
15	If say yes the above questions, when dose your LNMP?	....
16	Gestational age in week	………………………….
17	Current ANC visit	1.First visit 2.Second visit 3.Third visit 4.Forth visit
18	History of institutional delivery	1. Yes 2. No
19	The time period between pregnancy(in year)	………………………….
20	Do you change your partner after privacy pregnancy?	1.Yes 2.No

21	Have you history of infertility?	1.Yes 2.No
22	Have history of multiple pregnancies?	1.Yes 2.No
23	Have history of Rheumatic Disease	1. Yes 2. No
24	Have you previous history of DM	3. Yes 4. No
25	Have you previous history of Pre-eclampsia	1. Yes 2. No

Behavioral characteristics and family History of women

	Variables	Alternatives
26	Do you smoke	1.Yes 2.No
27	Do you drink alcohol	1.Yes 2.No
28	Do you chewing chat	1.Yes 2.No
29	Do you drink coffee	1.Yes 2.No
30	Have you family history of hypertension	1.Yes 2.No
31	Have you family history of DM	1.Yes 2.No
32	Have you family history of Pre-eclampsia	1.Yes 2.No

33	Have you work related stress	1.Yes 2.No

Data that will be obtained by reviewing woman's record or by measurement

34	Blood pressure of mother	………………..mmHg
35	Weight of mothers	………………Kg
36	Height of mother	………………Cm
37	Body Mass Index	………………Kg/M^2
38	Blood group and Rh factors of the mothers	
39	Proteinuria level of mother/urine dipstick	

THANK YOU SO MUCH

ሀ.ጥናቱ ተሳታፊዎች ስጥናቱ መረጃ መስጫቅጽ

እንደምን ዋ?ስሜ-----------ይባላል። በወልቂጤ ዩኒቨርሲቲ ውስጥ የሚዋይፍሪ ትምህርት ክፍል ተመራቂ ተማሪ ነኝ፡፡ እኛ በቡብ ክል በከንባታ ጠንባሮ ዞን በዱራማ ከተማ በሚገኙ የጤና ተቃማት ውስጥ የእርግዝና ክትት ለማድረግ በመጡ እናቶች ከሃያ ሳምንት እርግዝና በኋላ የሚመጣ የደም ግፊትን ስርጭትና ከ እርሱ ጋር ተዛማጅ የሆኑ ነገሮች በዱራሜ ከተማ በሚገኙ የመንግስት ጤና ተቋም በሚል ርዕስ ጥናት እያደረግን ነዉ። ጥናቱ ላይ መሳተፍ አሁን ለእርስዎ ያን ያህል ጥቅም ባይኖረውም የሚሰጡኝ መረጃ ግን በማነኛውም ነፍሰጡር እናቶች ላይ በእርግዝና ጊዜ የሚከሰት የደም ግፊት መንስኤውን እና ስርጭቱን ለመዳሰስ ይረዳናል።

ጥናቱ ላይ መሳተፍ አሁን ለእርስዎ ያን ያህል ጥቅም ባይኖረውም የሚሰጡኝ መረጃ ግን በማነኛውም ነፍሰጡር እናቶች ሊይ በእርግዝና ጊዜ ለሚከሰት የደም ግፊት መንስኤውን እና ስርጭቱን ለማወቅ ጥቅም ይኖረዋል ተብሎ ይታሰባል። እንዱሁም የጥናቱ ውጤት በዚህ ዙሪያ መስራት ለሚፈሌጉ ግለሰቦች፣ ተቋማትና ፖሊሲ አርቃቂዎች እንደግባት ይጠቅማሉተብል ይታሰባል። ለጥናቱ የሚያስፈልገው መረጃ ከእርስዎ የመረጃ ካርድእና እርስዎ ቃለ-መጠይቅ ሲጠየቁ በሚሰጡት መረጃ ነው። ስለዚህ እርስዎና የእረስዎ መረጃ ለመስጠት ፈቃደኝነት ይህን ጥናት ለማከሔዴ ወሳኝና በጣም አስፈሊጊ ነው።

ለ.ለጥናቱ ተሳታፊዎችየፍቃደኝነት መጠየቂያ ቅጽ

ከላይ በተገለጸውየጥናቱ ዓላማና ከሚሰጠውጥቅምአንጻር እርስዎ ለጥናቱ ከሚያስፈልጉ እናቶች መካከሌ በጥናቱ እዲሳተፉተመርጠዋዋ። እርስዎ የሚሰጡን መረጃ በማንኛውም ሁኔታ ከእኔና ካጥኝውበስተቀር ለሌላ ሶስተኛ ወገን አይታይም ወይምአይሰጥም። ስምዎና የእርስዎ ግለሰባዊ ማንነትከመረጃመሰብሰቢያው ቅጽ ላይ አይጻፍም ወይም ከጥናቱ ዓላማ ውጭ ለሌሊ ጥቅምአይውልም። በጥናቱ ለመሳተፍ የእርስዎ በጎ ፈቃደኝነት ወሳኝ ሲሆን ያለ መሳተፍም ወይም ጥያቄውን ሲጠየቁ በማነኛውም ጊዜ

ማቆምይችላሉ። መረጃ ለመስጠት ፈቃደኛ ባለመሆንዎም ምንም አይነት ችግር አይደርስብዎትም ወይም በሆስፒታለ ውስጥ ከሚያገኙት የጤና አገሌግሎት ጉዳት አይደርስቦትም። ነገር ግን ከላይ እንደነገርሁዎት እርስዎ የሚሰጡት መረጃ ለጥናቱ በጣም ጠቃሚ ነው። በሌላ በኩል በጥናቱ ለሚሳተፉት ተሳትፎ ምንም አይነት የተለየ ክፍያ ወይም ጥቅማጥቅም አይሰጥዎትም።

መረጃ ለመስጠት ፈቃደኛኖት?

1.አዎ ፈቃደኛ ነኝ። 2.ፈቃደኛ ነኛ ነኝ።

(አመሰግናለሁ)

1.ማህበራዊና ኢኮኖሚያዊ ሁኔታዎች

የሆስፒታለ−ስም፡ ------------------------------- መረጃው የተሰበሰበበት ቀን ፡ -----------------

1. ማህበራዊና ኢኮኖሚያዊ ሁኔታዎች

	መጠይቅ	አማራጮች
1	እድሜሽ ስንት ነው?	
2	የትዳር ሁኔታሽ ?	1.ያገባች 2.ያላገባች 3.የፈታች 4.በሞት የተለያት
3	ሐይማኖት	1.ፕሮቴስታንት 2.ኦርቶዶክስ 3.ሙስሊም 4.ሌላ ………………..
4	የመኖርያ በታ	1. ከተማ 2. ገጠር
5	ብሔር	1.ከንባታ

		2.ሀ ድ ያ 3.ኦ ሮ ሞ 4.አ ምሀ ራ 5.ወ ላ ይ ታ 6.ሌ ላ ………………..
6	የ ት ምህ ር ት ደ ረ ጃ	1.መጻ ፍ ና ማን በ ብ የ ማት ች ል 2.መጻ ፍ ና ማን በ ብ የ ምት ች ል 3.የ መጀ መሪ ያ ደ ረ ጃ 4.የ ሁ ለ ተ ኛ ደ ረ ጃ 5.ኮ ሌ ጅና ከ ዚ ያ በ ላ ይ
8	ስ ራ	1.የ መን ግ ስ ት ተ ቀ ጣሪ 2.የ ግ ል ተ ቀ ጣሪ 3.ነ ጋ ዴ 4.የ ቤ ት እ መቤ ት 5.ሌ ላ ………………
9	ወ ር ሀ ዊ የ ገ ቢ መጠን በ ብ ር	

		አ ማራ ጮች
9	ለ መጀ መሪ ያ ጊ ዜ የ ወ ር አ ባ ባ ያ የ ሸ ዉ በ ስ ን ት አ መት ሸ ነ በ ር ?	………………………..
10	ለ መጀ መሪ ያ ጊ ዜ ያ ረ ገ ሸ ው በ ስ ን ት አ መት ሸ ነ በ ር ?	....
11	ስ ን ተ ኛ እ ር ግ ዝ ና ሸ ነ ው?	…………………………

12	ስ ን ት ል ጅ ኦ ች ወ ል ደ ሻ ል ?	…………………………
13	የ ጽ ን ስ መ ቋ ረ ጥ አ ጋ ጥ ሞ ሽ ያ ው ቃ ል ?	1.አ ው 2.አ ይ
14	ለ መ ጨ ረ ሻ ጊ ዜ የ ወ ር አ በ ባ ያ የ ሽ በ ት ን ጊ ዜ ታ ስ ታ ው ሻ ለ ሽ ?	1.አ ው 2.አ ይ
15	ለ ጥ ያ ቄ ቁ ጥ ር 13 መ ል ሽ አ ው ከ ሆ ነ መ ቼ ነ ው ለ መ ጨ ረ ሻ ጊ ዜ የ ወ ር አ በ ባ ያ የ ሽ ው?	…………………………………
16	የ ር ግ ዝ ና ጊ ዜ በ ሳ ምን ት	……………………………
17	ይ ህ የ ር ግ ዝ ና ክ ት ት ል ስ ን ተ ኛ ሽ ነ ው?	1.የ መ ጀ መ ር ያ 2.የ ሁ ለ ተ ኛ 3.የ ሶ ስ ተ ኛ 4.ያ ራ ተ ኛ
18	በ ጤና ተ ቋ ም ወ ል ደ ሽ ታ ቂ ያ ለ ሽ ?	1. አ ው 2. አ ይ
19	በ የ ስ ን ት አ መ ት ል ዩ ነ ት ነ ው ም ታ ረ ግ ዝ ው?	………………………
20	ካ ለ ፈ ው እ ር ግ ዝ ና በ ኋ ላ የ ት ዳ ር አ ጋ ር ቀ ይ ረ ሻ ል ። ?	1.አ ው 2.አ ይ
21	መ ን ታ አ ር ግ ዘ ሽ ታ ው ቂ ያ ለ ሽ ። ?	1.አ ው 2.አ ይ
22	የ መ ገ ጣ ጠ ሚ ያ ች ግ ር አ ጋ ጥ ሞ ሽ ያ ው ቃ ል	1 አ ው 2 አ ይ
23	ከ አ ሁ ን በ ፊ ት የ ስ ኳ ር በ ሽ ታ አ ለ ብ ሽ ?	1 አ ው 2 አ ይ

24	ከ አ ሁ ን በ ፊ ት ከ ር ግ ዝ ና ጋ ር የ ተ ያ ያ ዘ የ ደ ም መ ጨ መ ር አ ጋ ጥ ሞ ሽ ያ ው ቃ ል ?	1. አ ው 2. አ ይ

	መ ጠ ይ ቅ	አ ማ ራ ጮ ች
25	ታ ጨ ሻ ለ ሽ	1.አ ው– 2.አ ይ
26	አ ል ኮ ል ት ጠ ቀ ሚ ያ ለ ሽ	1.አ ው 2.አ ይ
27	ጫ ት ት ቅ ሚ ያ ለ ሽ ?	1.አ ው 2.አ ይ
	ቡ ና ት ጠ ጫ ለ ሽ ?	1.አ ው 2.አ ይ
29	በ ቤ ተ ሰ ቦ የ ደ ም ግ ፊ ት ያ ለ በ ት ሰ ው አ ለ ?	1.አ ው 2.አ ይ
30	በ ቤ ተ ሰ ቦ የ ስ ኳ ር በ ሽ ታ ያ ለ በ ት ሰ ው አ ለ ?	1.አ ው 2.አ ይ
31	በ ቤ ተ ሰ ቦ ከ እ ር ግ ዝ ና ጋ ር በ ተ ያ ያ ዘ የ ደ ም መ ጨ መ ር ያ ጋ ጠ መ ው አ ለ ?	1.አ ው 2.አ ይ
32	ከ ስ ራ ጋ ር በ ተ ያ ያ ዘ ት ጨ ነ ቂ ያ ለ ሽ ?	1.አ ው 2.አ ይ

ከ እ ር ግ ዝ ና መ ከ ታ ተ ያ ካ ር ድ ላ ይ በ ማ የ ት ወ ይ ም በ መ ለ ካ ት የ ሚ ሞ ሉ መ ረ ጃ ዎ ች

33	የ ደ ም ግ ፊ ት መ ጠ ን	

34	የ እ ና ት ዩ ዋ ክ ብ ደ ት	……………………………. . ኪ ግ
35	የ እ ና ት ዮ ዋ ቁ መ ት	----------------------ሴ .ሜ
36	የ ደ ም ዓ ይ ነ ት	
37	የ ፕ ሮ ቲ ን ዩ ሪ ያ መ ጠ ን /ዩ ሪ ን ዱ ፕ ስ ቲ ክ ቴ ስ ት	………………………..

እናመሰግናለገን።