



JIMMA UNIVERSITY INSTITUTE OF PUBLIC HEALTH DEPARTEMENT
OF EPIDEMIOLOGY

PREVALENCE OF PRE-HYPERTENSION AND HYPERTENSION AND
ASSOCIATED FACTOR AMONG WOMEN FAMILY PLANNING USER IN
DEDO WOREDA, SOUTH WEST ETHIOPIA

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JIMMA ETHIOPIA

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ABSTRACT

Background: - Hypertension is a growing public health problem in many developing countries, including Ethiopia numerous studies in sub-Saharan Africa report the burden of hypertension in the general population, but its epidemiology among women of the reproductive age is not well known.

Objective: To assess the prevalence of Pre-hypertension and Hypertension and Associated factors among women family planning users in Dedo Woreda, South West Oromiya

Methods: - Facility-based cross-sectional study design was employed in randomly selected Health posts, Health centers, and hospitals. Three hundred ninety-eight women on follow-up of the Family planning method were randomly selected for interview. Data were entered into Epi data version 3.1 and exported to SPSS version 23 for data analysis. The descriptive analysis of data was done, and the result was presented using frequency tables and graphs. A multivariable logistic regression model was fitted, Adjusted Odds Ratio (AOR) at 95% confidence interval and p-value <0.05 were estimated to determine the statistically significant association between predictors and outcome variable

Result: - Prevalence of hypertension was 6.8%, (95% CI; 4.0-9.0) and pre-hypertension was 30.7%, (95% CI; 26.0-35.0), respectively. Significant association of pre-hypertension was found with age AOR 9.2,95% CI(3.235, 26.607) type of family planning 7.6 95%CI (3.235,15.483), duration of family planning use AOR 2.7, 95% CI:(1.337,5.298) and being overweight AOR 2,95% CI:(1.186,3.626). Similarly, hypertension was significantly associated with age AOR 5,6,95%CI (2.112,15.021), family history of hypertension AOR 4,95% CI (1,644,11.424), type of family planning method use AOR 5,95%CI (1,482,18,302), duration of family planning use AOR 2,5(1,012,6,675) and being overweight AOR 3,5,95%CI(1,317,9,573).

Conclusion:-This study revealed a low prevalence of hypertension and a relatively high prevalence of pre-hypertension. Therefore, without appropriate interventions, many pre-hypertension individuals will progress to hypertension as they grow older.

Key Word: - Hypertension, Pre Hypertension, women family planning user, Ethiopia,

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Abbreviation and Acronyms

AIDS	-	Anti Immune Deficiency Syndrome
AHA	-	American Heart Association
B.P.	-	Blood Pressure
BMI	-	Body Mass Index
CHC	-	Combined Hormonal Contraceptive
CVD	-	Cardio Vascular Disease
CHD	-	Congestive Heart Disease
CHF	-	Congestive Heart Failure
CNCDs	-	Chronic non-communicable diseases
CTS	-	Cardio Tonic Steroid
CKD	-	Chronic Kidney Disease
DBP	-	Diastolic Blood Pressure
E.E.	-	Ethyl Estradiol
HEARTS	-	Health lifestyle counseling Evidence-based treatment protocol Accesses to essential medicine and technology Risk-based chart Team-based care System for monitoring
H.C.	-	Health Center
H.P.	-	Health Post
HIV	-	Human Immune Virus
HTN	-	Hypertension
JNC	-	Joint National Committee
MOH	-	Ministry of Health
MCH	-	Maternal and child health
MMHg	-	Millimeter Mercury
SBP	-	Systolic Blood Pressure
SSA	-	Sub-Sahara Africa
RAAS	-	Renin-Angiotensin-Aldosterone System
WC	-	Waist Circumference
WHO	-	World Health Organization
WHR	-	Waist Hip Ratio
WHtR	-	Waist Height Ratio

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CHAPTER ONE

1. Introduction

1.1. Background

Hypertension is defined when blood pressure (B.P.) reaches 140/90 mmHg or greater, but the risk of CVDs increases progressively for each increment of systolic blood pressure (SBP) above 115 mmHg and or diastolic B.P. (DBP) above 75 mmHg. Similarly, SBP ranges of 120–139 mmHg and/or diastolic B.P. (DBP) of 80–89 mmHg have been defined as pre-hypertension (1).

Hypertension is a growing public health problem in many developing countries, including Ethiopia. However, its prevention and control have not yet received due attention from many developing countries. Hypertension is one of the most modifiable risk factors for cardiovascular diseases. However, awareness about the treatment and control of hypertension is deficient among developing nations, including Ethiopia (2).

Hypertension is a persistent elevation of the systemic arterial blood pressure. It is one of the significant cardiovascular risk factors contributing to myocardial infarction, cerebrovascular accidents, end-stage renal disease, congestive heart failure, peripheral vascular insufficiency, and premature mortality. In general, it is a significant public health challenge in developed and developing countries (3).

In the recent JNC-7 report, pre-hypertension, a new category including normal and high-normal blood pressure (B.P.), was added because normal or high-normal B.P. might be another condition related to the development of cardiovascular disease diseases (CVD) in the future. Many public health and medicine researchers agree to apply more aggressive measures and early lifestyle modification for the population with Pre-HTN to prevent future CVD and hypertension (HTN) (4).

Globally, 7.7 million annual premature deaths and 6% of the global disease burden are attributable to hypertension. Raised blood pressure is estimated to cause 7.5 million (12.8% of all causes of death) deaths per year. As such, the growing prevalence of hypertension is a significant public health concern. The global prevalence of hypertension will be projected to increase from 26% in 2000 to 29.2% by 2025, approximately 29% of the world's population. The burden of

hypertension has shifted to affect low-income and developing countries instead of developed countries such as the United States (5).

Several studies indicate that hypertension in sub-Saharan Africa (SSA) is a widespread problem, and in some communities, it has been reported to be as high as 38 %. It is estimated that out of the approximately 650 million people in SSA, 10 to 20 million may have hypertension. However, many countries in SSA still lack detailed primary data on the prevalence of hypertension (6).

Numerous studies in SSA report the burden of HTN in the general population, but its epidemiology among women of the reproductive age is not well known. Few existing studies have reported prevalence rates ranging from 18.6% in urban Zambia but as low as 6.7% in rural Zambia to 8.3% in urban Ethiopia. Furthermore, most HTN patients in SSA are unaware of their condition, and without appropriate interventions, many pre-HTN individuals may progress into HTN as they grow older. Studies in Ethiopia showed that the prevalence of hypertension both in rural and urban inhabitants. It ranges from 13 to 30% (7).

1.2 Statement of the Problem

Cardiovascular disease (CVD) is the leading cause of death among women overall and the third leading cause of death among women aged 18–44 years. Hypertension presents important clinical implications and challenges in women of reproductive age group, not only because of its role as a risk factor for CVDs but also because of hypertension during pregnancy. Most hypertension patients in Sub Sahara are unaware of their condition, and without appropriate interventions, many pre-hypertension individuals may progress into hypertension as they grow older. Many pre-hypertension and hypertension women in the reproductive age group are therefore likely to enter pregnancy with adequately controlled pressure, putting themselves and their fetus at risk(3)

The influence of pre-HT on birth outcomes in SSA is not evident. Still, recent reports from higher-income countries have reported that pre-HT early in pregnancy was associated with an increased risk of small for gestation age, pregnancy-induced hypertension, neonatal sepsis, perinatal mortality [38, 39]. Therefore, without appropriate intervention, 20–50% of hypertensive women will develop super imposed preeclampsia [17, 19]. The association between risk factors such as increased age, obesity, physical inactivity, smoking, and alcohol consumption with pre-hypertension and hypertension has been studied in detail among older women. Still, less is known among women of the reproductive age in SSA. For instance, obesity and overweight major risk factors of hypertension disproportionately affect more women than men in SSA (3)study could potentially be at risk of adverse pregnancy outcomes(3)

Early identification of chronic diseases (e.g., hypertension and pre-hypertension) is also essential for preconception care and preventing adverse pregnancy outcomes such as low birth weight, preterm deliveries, and congenital disabilities. Furthermore, without appropriate intervention, 20–50% of hypertensive women will develop superimposed preeclampsia (3)

Developing countries account for approximately 99% (302,000) of global maternal deaths, and Sub-Saharan Africa alone accounts for roughly 66% (201 000) of this death. The magnitude also varies among different countries and regions depending on the health care quality and availability (8). Approximately 12% of the maternal deaths are associated with hypertensive disorders in pregnancy, such as pregnancy-induced hypertension (9)

On the other side, some research indicates that sex hormone from the aging affects arterial pressure, mainly because sex steroid concentrations decrease in humans as they age. It has been reported that the prevalence of pre-hypertension in women is higher than in their male counterparts, and they present increased rates of cardiovascular disease with advancing age. And this study result revealed 38.5 % of women of reproductive age were pre-hypertensive, and the remaining 27.5% were hypertensive(10)

Also, another study conducted in 2017 rural area of Jorhat district, Assam revealed 45.5% of them were pre-hypertensive, 10.5% and 4.5% of them were found to be in stage-I and stage-II hypertension, respectively, among women in the reproductive age group (11)

Regarding hormonal family planning method uses and duration of use can expose the mother to hypertension studies conducted in 2019 G.C Chench, Southern Ethiopia a cross-sectional study reveal that overall, oral contraceptive pills user appears to cause a 2.5% increase in mean arterial blood pressure(12).

Numerous studies in SSA report the burden of HTN in the general population, but its epidemiology among women of the reproductive age is not well known. So that identifying and treating pre-hypertension and hypertension and their precursors during family planning visits may improve long-term health and reproductive outcomes among women of reproductive age. CVD screening during family planning visits can identify significant numbers of women at risk for poor pregnancy outcomes and future chronic disease and provide prevention opportunities if effective interventions are available and acceptable to this population. (13).

So, this study's main objective was to assess the prevalence of pre-hypertensive and hypertension and associated risk factors among women family planning users in Dedo woreda Jimma zone South-west Ethiopia.

1.3 Significance of the study

This study result can help Dedo woreda health office decision body and health planner and health center and health post staff give appropriate prevention and treatment intervention based on an empirical snapshot of the current result of this study.

Second, the research finding helps Jimma Zonal health office and Non- governmental organizations that support Dedo woreda health facilities working in the area to identify the gap or Factor for the prevalence of pre-hypertension and hypertension among women on follow up F.P. method and intervene appropriate intervention.

Third, for Jimma university academic students who need further investigation by providing reliable and current data about the prevalence of pre-hypertension and hypertension and associated factors among women family planning users in Dedo woreda.

Therefore, this study aimed to determine the prevalence of pre-hypertension and hypertension and associated Factors in women family planning users in Dedo woreda South West, Oromiya Regional State, Ethiopia.

CHAPTER TWO

2. Literature Review

Traditionally, attention to health problems by researchers and policymakers in sub-Saharan Africa has focused on infectious diseases. However, demographic and epidemiological determinants of health, particularly changes in lifestyle associated with urbanization, have resulted in epidemiological nutrition transition toward a greater prevalence of the non-communicable disease. The dual burden of infectious diseases such as HIV/AIDS, malaria, Tubercle bacillus., and emerging chronic disease such as cardiovascular disease and diabetes mellitus, poses a threat to population health and limited health care resource (1).

Ethiopia is also one of the most affected countries in the region. According to a study conducted in Gondar City, Ethiopia, hypertension in adults aged 18 years and above was 28.3% (2).

Globally, cardiovascular disease accounts for approximately 17 million deaths a year, nearly one-third of (1). Of these, complications of hypertension account for 9.4 million deaths worldwide every year (2). Hypertension is responsible for at least 45% of deaths due to heart disease and 51% of deaths due to stroke. In 2008, worldwide, approximately 40% of adults aged 25 and above had been diagnosed with hypertension; the number of people with the condition rose from adults aged 25 and above 600 million in 1980 to 1 billion in 2008 (3).

Hypertension is a silent killer, and most patients are detected to have it incidentally when they are admitted to a hospital for unrelated disease or subjected to pre-employment or preoperative medical check-ups. The exact causes of high blood pressure are unknown, but several factors and conditions may play a role in its development (7).

Few studies indicate that the disease has become a significant public health problem, especially in the major cities of Ethiopia. According to the studies conducted in Addis Ababa and Gondar, hypertension was high, probably indicating a hidden epidemic in those communities (7).

It has been reported that the prevalence of pre-hypertension in women is higher than in their male counterparts, and they present increased rates of cardiovascular disease with advancing age. Menopausal and premenopausal periods are critical periods for CVD emergence because of changes in hormonal patterns (10).

In the seventh report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC 7), a new B.P. category, pre-hypertension (SBP 120–139 mmHg or DBP 80–89 mmHg), was introduced. Recently, meta-analysis studies have shown that pre-hypertension is associated with a high risk of CVD (14).

Why is hypertension a significant public health issue in low- and middle-income countries?

The prevalence of hypertension varies across the WHO regions and country income groups. The WHO African Region has the highest prevalence of hypertension (27%), while the WHO Region of the Americas has the lowest prevalence of hypertension (18%)(15).

A review of current trends shows that the number of adults with hypertension increased from 594 million in 1975 to 1.13 billion in 2015, with the increase seen mainly in low- and middle-income countries. This increase is due primarily to a rise in hypertension risk factors in those populations(15).

The prevalence of hypertension is highest in the African Region at 46%. The increasing prevalence of hypertension is attributed to population growth, aging, and behavioral risk factors, such as unhealthy diet, harmful use of alcohol, lack of physical activity, excess weight, exposure to persistent stress, and weak health systems. The number of undiagnosed, untreated, and uncontrolled people with hypertension is also higher in low- and middle-income countries than in high-income countries (15).

The new epidemic of hypertension and cardiovascular diseases is not only a significant public health problem, but it will also have a significant economic impact as a significant proportion of the productive population becomes chronically ill or dies, leaving their families in poverty(16).

2.2. Risk factors for hypertension

Non-Modifiable risk factor

The non-modifiable risk factors are attributes or characteristics in the individual that cannot be changed or adjusted. Hence they are out of our control, and little or nothing can be done to control them; such factors include age, sex, race, family history, genetic composition, etc.(17)

Age the older you are, the more likely you are to get high blood pressure. As we age, our blood vessels gradually lose their elasticity, which contributes to increased blood pressure. Finally, the risk of hypertension increases with age due to the stiffening of blood vessels. The lifetime risk of developing hypertension is 90%. Men are at higher risk than women for hypertension earlier in life, while older women are at higher. although aging of blood vessels can be slowed through healthy living, including healthy eating and reducing the salt intake in the diet(17)

Gender until age 64, men are more likely to get high blood pressure than women are. At 65 and older, women are more likely to get high blood pressure(17).

Race African-Americans tend to develop high blood pressure more often than people of any other racial background in the United States. It also tends to be more severe in African Americans, and some medications are less effective in treating High blood pressure in blacks(17).

Family history If your parents or other close blood relatives have high blood pressure, there's an increased chance that you'll get it, too (17).

Modifiable risk factor

On the other hand, modifiable risk factors of hypertension are attributes, characteristics, exposures, or lifestyle patterns that can be adjusted or changed to prevent the development of the disease. These modifiable risk factors include; obesity, excessive salt intake, inactivity or lack of exercise, high fat diet, tobacco use, alcohol consumption, etc. (18).

Being overweight or obese: Carrying too much weight puts an extra strain on your heart and circulatory system that can cause serious health problems. It also increases your risk of cardiovascular disease, diabetes, and high blood pressure(18)

An unhealthy diet, especially one high in sodium: Good nutrition from various sources is critical for your health. A diet that is too high in salt consumption and calories, saturated and trans fat and sugar, carries an additional risk of high blood pressure. An unhealthy diet of incredibly saturated and trans fat results in high cholesterol, More than half of people with high blood pressure also have high cholesterol. On the other hand, making healthy food choices can help lower blood pressure(18).

Lack of physical activity: Not getting enough physical activity as part of your lifestyle increases your risk of high blood pressure. Physical activity is excellent for your heart and circulatory system in general, and blood pressure is no exception. In addition, your occupation is sedentary increases your risk of getting high blood pressure(18).

Smoking and tobacco use: Using tobacco can cause your blood pressure to increase and damage arteries temporarily. Second-hand smoke, exposure to other people's smoke, also increases the risk of heart disease for non-smokers(18).

Drinking too much alcohol: Regular, heavy alcohol use can cause many health problems, including heart failure, stroke, and an irregular heartbeat (arrhythmia). It can cause your blood pressure to increase dramatically and increase your risk of cancer, obesity, alcoholism, suicide, and accidents(18).

Other Health Conditions Certain other health conditions can increase your risk for hypertension. Having diabetes or high cholesterol both raise hypertension risk. If you have these conditions, you can lower your risk for hypertension by trying to control diabetes or lower cholesterol(18).

Lifestyle changes related to urbanization and income rise are fueling a sharp rise in chronic non-communicable diseases, including HTN, which are now becoming the leading cause of death in many low- and middle-income countries where the problem was little appreciated before(19)

The increasing burden is attributed to aging, increasing population, and adoption of unhealthy lifestyles. The weak health systems, low literacy levels, periodic medical check-ups, and prevailing poverty contribute to frequent misconceptions about hypertension, low detection, and insufficient disease control. Individual studies observe that older age, high body mass index (BMI), alcohol use, female sex, and urban residence are the main factors associated with hypertension in adults (20).

Hormonal contraceptive use and duration of service Due to estrogen and progesterone receptors in all constituent layers of the blood vessels, female sex hormones' effects on the cardiovascular system have been subjected to scientific interest (3). Older studies have shown that contraceptive pills use potentially increases systolic blood pressure (SBP) in women who

usually presented higher pressure levels (4). Recent studies also highlight that combined hormonal contraceptives (CHC), containing ethinylestradiol (E.E.), always change the blood pressure (B.P.), even at low doses. Despite not causing clinical repercussions in healthy women, they should be avoided by women with high blood pressure. Previous studies indicated that exogenous estrogen in the body, contained in CHCs, stimulated the RAAS and caused increased systolic and diastolic pressures due to water and sodium retention, especially in hypertensive women. Four articles study two being reviews indicated. As a result, the significant increase in blood pressure by use of CHC, both in hypertensive and normotensive women. In addition, two articles linked the extended time of medication use to the prevalence of hypertension, and one found high rates of hypertension in the user population of this type of medicine(21).

2.3. Conceptual Frame Work

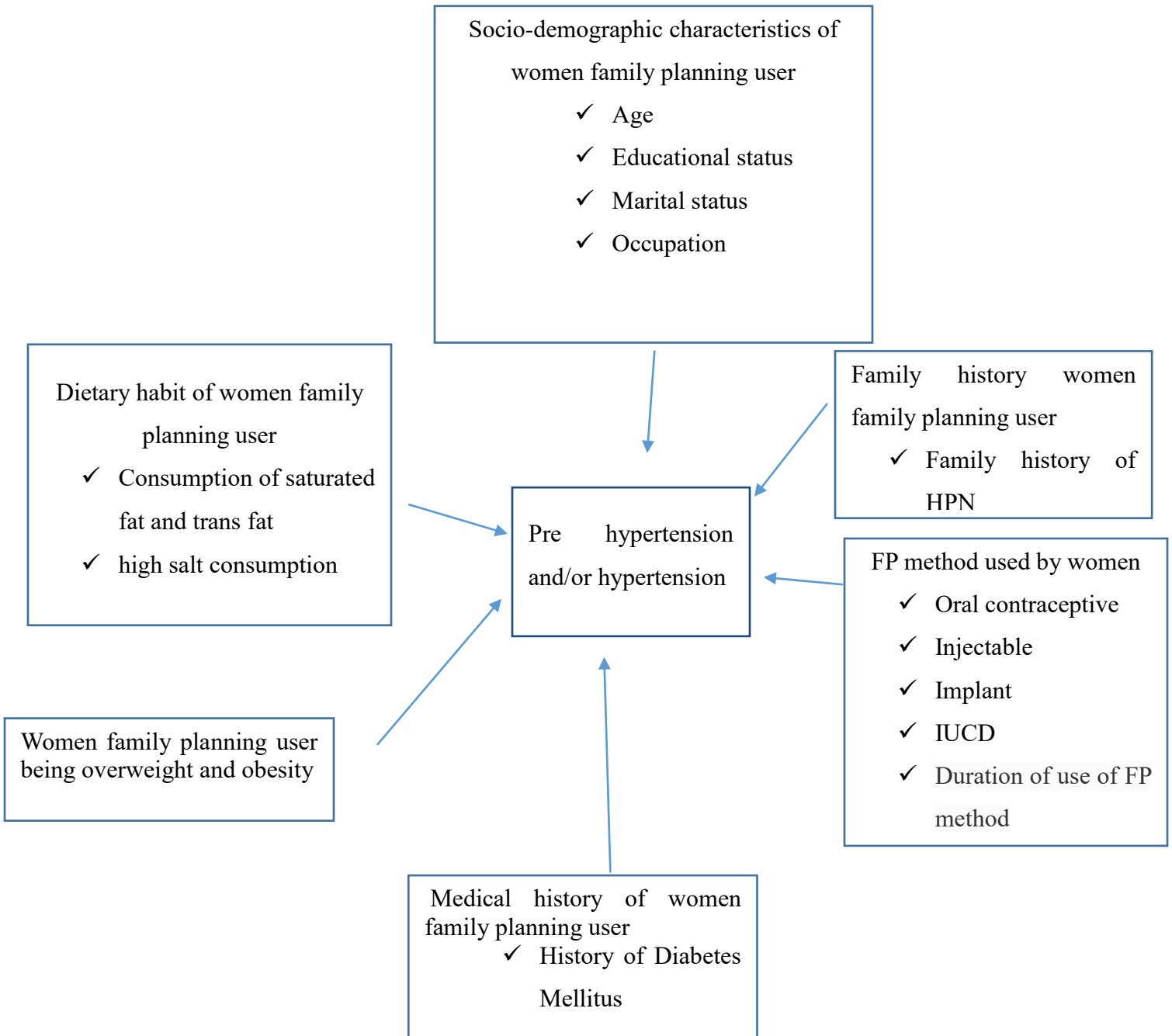


Figure 1: Conceptual Frame Work Developed from Literature

CHAPTER THREE

2. Objective

2.1. General Objective

To assess the prevalence of Pre-hypertension and hypertension and Associated factors among women Family Planning users in Dedo Woreda, South West Ethiopia.

2.2. Specific Objective

- ⌚ Determine the prevalence of pre-hypertension among women family planning users in Dedo woreda.
- ⌚ Determine the prevalence of hypertension among women family planning users in Dedo woreda.
- ⌚ Identify associated Factors for pre-hypertension among women family planning in Dedo woreda.
- ⌚ Identify associated Factors for hypertension among women in family planning in Dedo woreda.

CHAPTER FOUR

4. Method and Material

4.1. Study Area and period

The study was conducted in Dedo Woreda, situated 20 km to the southwest of Jimma town, with a total population of 238,356, of which 52,748 are women of reproductive age groups, 44,406 family planning eligible women, and 8271 expected pregnancies. And currently, 25,547 women use family planning methods. The district also has 34 Health posts, eight health centers, and one hospital. In hospital short acting and long acting family planning method including permanent method like tub ligation, vasectomy were provided and at health center and health posts short acting and reversible long acting family planning method were provided. The study was conducted in Jimma zone Dedo woreda in one hospital, two health centers, and ten health posts south west Oromia, Ethiopia, from December 1/2020 – 30 Dec, /2020.

4.2. Study design

A facility-based cross-sectional study design was employed

4.3. Source Population

The source population was all women family planning users found in Dedo woreda government health facility.

4.4. Study population

The study population was women family planning users in Dedo Woreda randomly selected government health facilities (1 hospital, 2-health center, and ten health posts).

4.5. Inclusion and Exclusion criteria

4.5.1. Inclusion criteria

Women who new and repeat family planning method user at government health facility

4.5.2. Exclusion criteria

Emergency pill user, Irregular condom user, Permanent procedure (tub ligation).

4.5.3. Sample size

The required sample size was determined by using a single population proportion formula by considering the following assumptions;

$$n_0 = \frac{Z@/2)p(1-P)}{d^2}$$

n₀ is the sample size

Z is standard normal distribution at 95% confidence interval

P is prevalence (P) = study conducted in northeastern Tanzania among reproductive age group on, 2018 G.C, the overall prevalence of pre-hypertension was found to be 37.5 % and hypertension 8.5%, and a risk factor for pre-hypertension was 51.2% and for hypertension was 52.7%).

D is error margin at 0.05

S. No	Variables	Prevalence from the previous study	Sample size	Remark
1.	Pre-Hypertension	37.5%	360	
2.	Hypertension	8.5%	196	
3.	Associated Factor for Pre-hypertension	51.2%	384	
4.	Associated Factor for Hypertension	52.7%	383	

By selecting the large sample size, the sample size was 384

By adding a 10 % non-response rate

The sample size was 422

4.5.4 Sampling procedure

To select study units, first, a complete enumeration of all health facilities (Hospital, Health Center, and Health posts) found in Dedo woreda, the listed all health facility, was then served as a sampling frame. Later, stratification of the health facilities" according to Ethiopian health tire system. Finally, health facilities" were selected using a simple random sampling technique. Study subject (women) were selected all women available for family planning service included until the required sample size was reached.

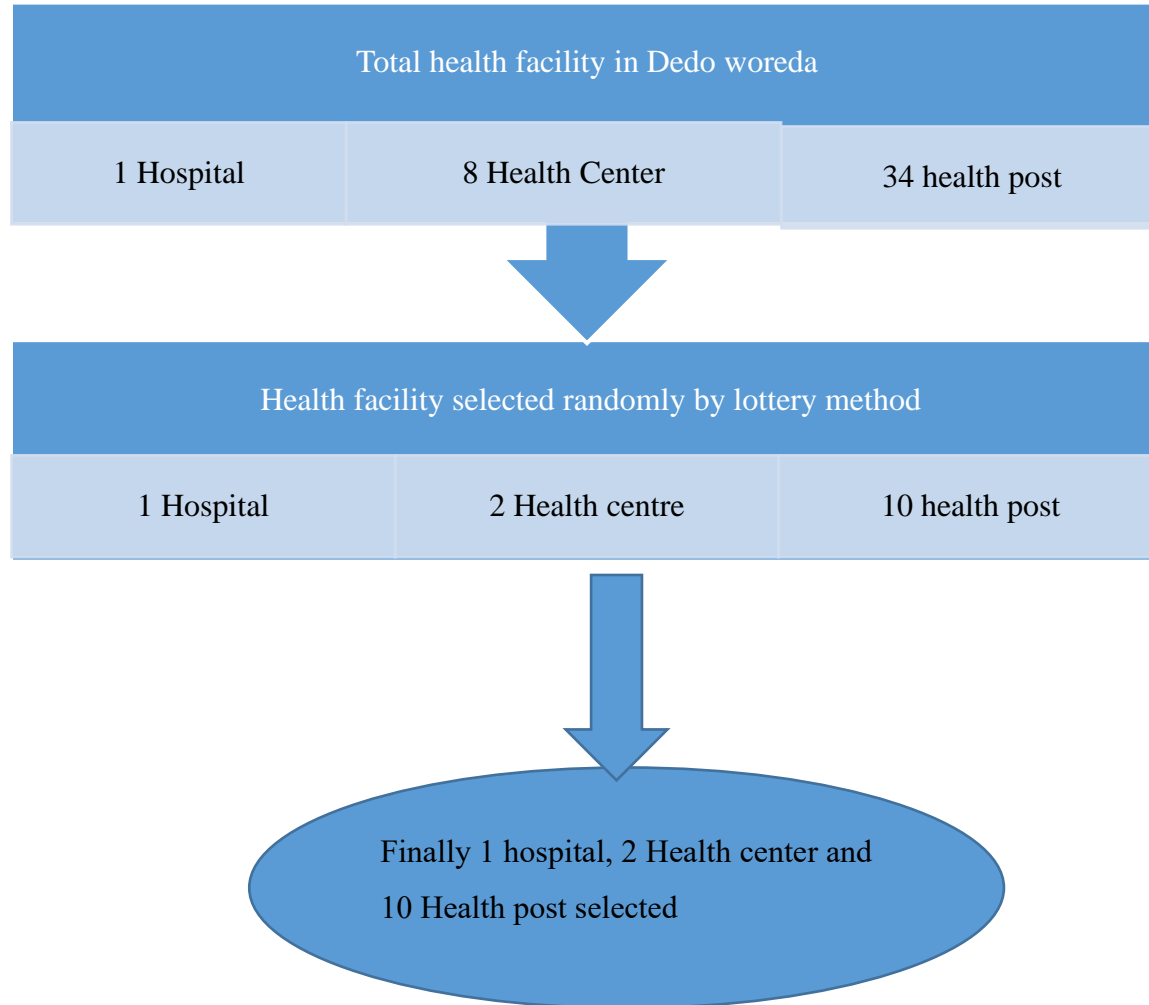


Figure 2: Diagrammatic illustration of sampling technique for assessment of the prevalence of Prehypertension and Hypertension and Associated Factor among women Family Planning user in Dedo Woreda, South West Ethiopia

4.6. Study Variables

Dependent Variable: - Both Pre-hypertension and hypertension

Independent variable: Sociodemographic characteristics (Age, Educational status, Occupation, Marital status), Diet habit (consumption and amount of fat and saturated fat, salt consumption), F.P. Method used (oral contraceptive, injectable, implant and IUCD) and duration of family planning method use, family history of hypertension, medical history of women like DM, overweight and obesity.

Physical Measurements:-height, weight, blood pressure

4.7 Operational definition

Consumption and amount of Saturated and trans fat: consumption of 1tsp butter in daily meal considered as **low**, consumption of 2tsp butter in daily meal considered as a **medium**, consumption of 3and > 3tsp butter in daily meal considered as **high**,

Salt consumption: consumption of 1tsp salt per day is considered low and consumption of 2tsp salt per day is deemed to be medium, and consumption of 3tsp salt per day is considered **high**.

4.8. Data collection procedure

4.8.1. Data collection instrument

The questionnaire was adapted from a review of other literature in the English language, and a closed-ended question was used, and the questioner has six main sections, and it was translated to local language and then returned to English. Comparisons were made on the consistency of the two versions. The questionnaire was further modified after the pre-test was conducted

4.8.2. Data collection

Data were collected using pre-tested interviewer-administered structured questionnaires, which contain closed and open-ended questions. The questioner was tested in one health post (waro colobo health post) outside the research conducted health post and few modifications was done in diet habit part of the questioner and behavioral part was omitted. The principal investigators were involved in a supervisory role during data collection. Data collection was interview by health worker who were work at MCH room at health facility and volunteer to participate to collect the data and a one day orientation training were provided and data collector (health worker) collect the data like socio-demographic data and medical history, dietary history, family history, substance use, physical inactivity, and F.P. method use and conducting physical measurements like taking blood pressure, weighing, and heighten. Especially, Blood pressure was measured using Mercury devices, and the blood pressure apparatus was assessed for calibration at the start and service before the study (e.g., clean columns and mercury “zeroed”). And was ensure that the device is calibrated periodically, and fitting upper arm cuffs were measured three times at first 5 min second at 10 min and third at 15 min. The women should be seated for 3–5 min without talking or moving around before recording the first B.P. reading. The

blood pressure was taken in a Seated position and Have the women relax, sitting in a chair with feet flat on the floor and back was supported. The B.P. cuff, which is the adult size (bladder encircles 75%–100% of women's arm), was at the level of the women's right atrium on the right upper arm, and cloth covering the location of the cuff placement was removed. The woman was holding her arm because isometric exercise would affect the B.P. levels, but the health worker supported her arm (e.g., resting on a desk). As much as possible, the women avoided caffeine, exercise, and even smoke for at least 30 minutes before measurement. The average of ≥ 3 readings obtained was used to estimate the women's blood pressure. Anthropometric measurements like weight will be measured using a vertical weight scale, and standing weight scales were placed on a firm, flat surface, and the women were asked to remove their footwear (shoes, slippers, sandals, etc.) and socks. And was told the women to step onto the scale with one foot on each side of the scale. Standstill and her face forward and women place arms on the side, and she waited until asking to step off, and weight of women was recorded in kilograms, height was measured by using a stadiometer and was Asking the women to remove her footwear (shoes, slippers, sandals, etc.), Headgear (hair bows, comb, ribbons, etc.), to stand on the board facing you. The women were to stand with Feet together, Heel against the backboard, Knees straight to look straight ahead and not look up, and make sure their eyes are the same level as the women's ears. In addition, Move the measured arm gently down onto the women's head and ask the woman to breathe in and stand tall. Height was read and recorded in centimeters at the exact point. Finally, by telling the women to step away from the measuring board, weight in kg and height in meter square was analyzed for BMI.

4.8.3. Data quality assurance

The pre-test was done on 5% of the sample size out of the study population on one of the health posts outside the selected health post for final research data collection, and some correction was made on the questionnaire . To assure the quality of collected data, the following measure was undertaken. The appropriately designed data collection instrument was used. Every day the collected data was review and check for completeness and consistency of the response

4.9. Data processing, Analysis, and Presentation

The quantitative data were entered into Epi version 3.1 and transferred into SPSS version 23 for analysis and descriptive statistics like frequency. Percentage charts used done. Binary logistic reg

ression analysis was used to see the independent effect of predictors on pre-hypertension and hypertension. Those variables with a P-value of ≤ 0.25 during bivariate analysis were retaining for multivariable analysis. A stepwise backward elimination model building procedure was used while building the model. Later on, an adjusted odds ratio (AOR) at 95% confidence interval was used to declare statistical significance association between dependent and independent variables. A p-value of less than 0.05 was considered statistically significant

4.10. Ethical consideration

Ethical clearance was obtained from the Ethical Review Board of Jimma University Health institute. Then officials at different levels in the study area were communicating through letters from Jimma University health institute. Letters of permission were presented to the Dedo woreda Health Office. Before the interview and physical examination, verbal informed consent was obtained from each study subject after the study's purpose is explained to the respondent. The instruments and procedure were not causing any harm to the study subject. Confidentiality of the information was assured, and the privacy of the respondent was maintained but the women with hypertension was linking to chronic disease follow up department and health care providers given advise to shift family planning method to non-hormonal contraceptive and pre hypertension women was counseled on to use non hormonal contraceptive and healthy life style(physical activity, healthy diet, regular checkup).

4.11. Plan for dissemination of finding

The finding of this study was disseminated to Jimma university health institute department of epidemiology and Dedo woreda health office as well as study hospitals, health centers, and health posts to help them for the development of a plan based on the finding for future better health outcomes of reproductive age group women family planning user.

CHAPTER FIVE

5. RESULT

5.1 Descriptive statistics result

5.1.1. Socio-demographic characteristics of respondents

A total of 398 women were included in this study, with a response rate of 94.3%. Out of the total number (43.5 %), study participants' age was between 25 - 34 years. The overall mean age for all age categories was 28 years ($27 \pm 7SD$), and the majority of them were married, 82.7 %. Regarding educational status, 31.9% of women have no formal education, which means unable to read and write. One hundred eighty-two of the study participant's occupation was a housewife (table1).

Table 1 Socio-Demographic characteristics of women family planning method user in Dedo wore da, health facility Jimma zone South West Oromiya, 2021.

Socio-demographic characteristics	Frequency (%)
Age of women's FP method user	
14-24 years	129(32.4%)
25-34 years	173(43.5%)
35-44 years	96(24.1%)
Educational Status of women's FP method user	
Unable to write and read	127(31.9%)
Elementary	102(25.6%)
Secondary	56(14.1%)
Collage and above	113(28.4%)
Marital status of women's F.P. method user	
Unmarried	49(12.3%)
Married	329(82.7%)
Divorce	20(5%)
Occupations of women's FP method user	
Housewife	182(45.7%)
Government	73(18.3%)
Student	37(9.3%)
Merchant	80(20.1%)
Farming	26(6.5%)

5.1.2 Family Planning Method use and duration

All women included in this study were used the family planning method. Study participants use 35.2%, 33.9%, 23.9%, 7%, Implants, Injection, pills, and IUCD respectively. Among the reproductive age women's family planning users take part in this study, 51.8% of them used the family pl

anning method for less than two years; 27.6% of them used more than five years, and the remaini
ng 20.6% of them used family planning for 2-5 years table 2.

*Table: 2 Family planning method used and duration among women's in Dedo woreda health facility, Jim
ma zone South West Oromiya, 2021*

Family Planning Method use and duration	Frequency (%)
women's F.P. method uses by type	
Pills	95(23.9%)
Injection	135(34%)
Implants	140(35.2%)
IUCD	28(7%)
women's FP method uses by duration	
Less than and equals to 2 years	204(51.3%)
Between 2 to less than five years	74(18.6%)
Greater than and equals to 5 year	110(27.6%)

5.1.3 Prevalence of Hypertension

Mean systolic blood pressure is 115 mmHg (± 11 SD) and mean diastolic blood pressure 76mmHg (± 9 SD). Hypertension is more prevalent in the age group 35-44 years (5%), and among hyperten
sive patients, only 7(25.9%) are aware of their condition,

The prevalence of pre-hypertension was 30.7% (95% CI; 26.0-35.0) and hypertension
was 6.8% (95% CI; 4.0-9.0) among women's family planning users in the study area.

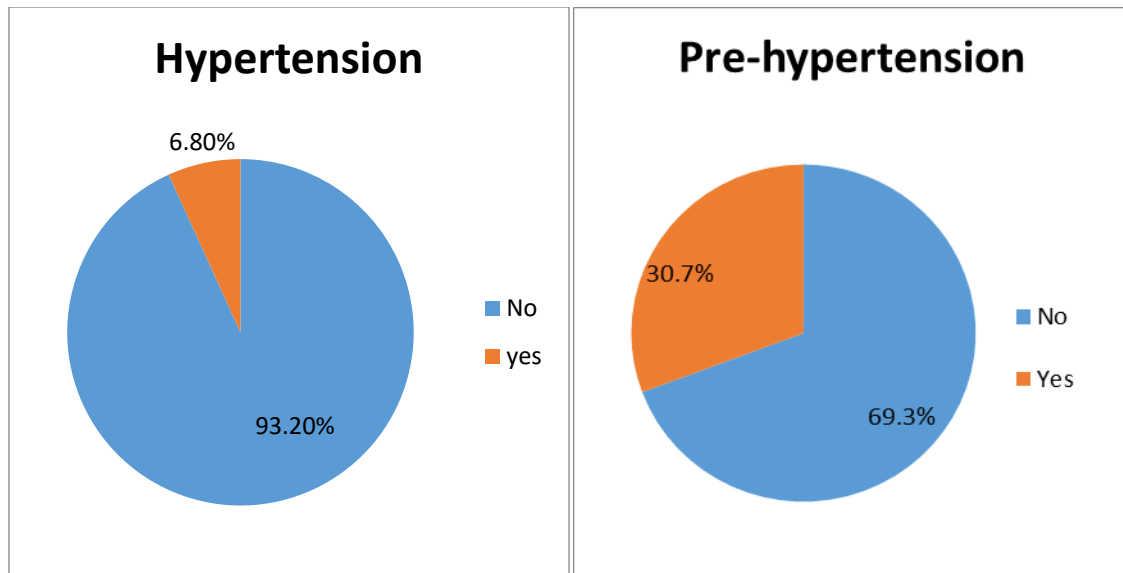


Figure 3: Prevalence of pre-hypertension and hypertension among women's Family Planning user in Dedo woreda health facility, Jimma zone South West Oromiya, 2021

5.2. Bivariate and Multivariate Analysis Result of pre-hypertension and Hypertension

5.2.1. Bivariate Logistic regression Result analysis of pre-hypertension

Factors associated with pre-hypertension and hypertension

In bivariate logistic regression analysis. Age, educational status, marital status, occupation, type of FP method used, duration of F.P. used, BMI, Butter consumption, and salt consumption were associated with pre-hypertension at p-values < 0.25 While, age, education, Occupation, type of F. P. used, duration of F.P. used in years, having a history of hypertension in family, BMI, salt consumption were associated with hypertension at P-value less than 0.05.

Table 3: Bivariate logistic regression analysis result of pre-hypertension among women's in Dedo woreda health Facility, Jimma zone South West Oromiya, 2021(n=398).

Independent variable		Frequency	Pre hypertension			Bi variable	P -value
			Yes	Percentage (Yes)	No	COR (95%CI)	
Age in years	14-24	129	9	2.3	120	1	
	25-34	173	72	18.1	101	17(6.880,45.428)	<0.001
	35-44	96	41	10.3	55	18(6.930, 49.319)	<0.001
Educational status	Secondary	158	33	8.3	125	1	
	College and above	113	40	10.1	73	1.002(0.590, 1.701)	0.996
	Unable to write and read	127	45	11.3	82	0.482(0.280, 0.830)	0.009
Marital status	Divorced	20	9	2.3	11	1	
	Unmarried(Single)	49	12	3.0	37	0.655(0.260, 1.652)	0.370
	Married	329	101	25.4	228	0.385(0.124, 1.194)	0.098
Occupation	Student	63	14	3.5	49	1	
	Government	73	24	6.0	120	1.0(0.590, 1.791)	0.096
	House wife	182	62	15.6	49	0.482(0.280, 0.830)	0.009
Type of F.P. used	IUCD	168	33	8.3	135	1	
	Pills	95	51	12.8	44	4.742(2.723, 8.256)	0.001
	Injection	135	34	8.5	101	1.377(0.799,2.373)	0.249
Duration of FP used in years	< 2 years	204	37	9.3	167	1	
	2-5 years	84	38	9.5	46	3.7(2.134,6.515)	<0.001

	>5 years	110	43	39.1	67	2.9(1.717,4.887	<0.001
BMI	Normal weight	298	230	57.8	68	1	
	Overweight	100	50	12.6	50	3.382(2.101, 5.446)	0.001
Salt consumption	2tsp	216	62	15.6	154	1	
	1tsp	77	25	6.3	52	1.041(0.623, 1.737)	0.879
	3tsp	105	31	7.8	74	1.194(0.682, 2.092)	0.535

Table 4: Bivariate Logistic Regression analysis result of Factor Associated with Hypertension among women family planning user in Dedo woreda Health Facility, Jimma zone, Southwest Oromiya, 2021.

Independent Variable		Frequency	Hypertension			Bivariate Crude OR(95%CI)	P-Value
			Yes	Percentage (yes)	No		
Age	14-34years	302	7	1.8	295	1:00	
	35-44 years	96	20	5.0	76	11.781(3.385,40.995)	<0.001
Education	Secondary	158	9	2.3	149	1:00	
	Collage and above	113	8	2.0	105	1.122(0.427,2.948)	0.816
	Unable to write and read	127	10	2.5	117	0.793(0.296,2.122)	0.644
Occupation	Student	37	7	1.8	110	1:00	
	Government	99	6	1.5	93	0.774(0.288,2.082)	0.573
	House wife	182	14	3.5	168	0.764(0.299,1.952)	0.612
F.P. method use	IUCD	169	5	1.3	164	1:00	
	Injection	134	7	1.8	127	2,583(0.761,8,769)	0.128
	Pills	95	15	3.8	80	7,687(2,471,23,914)	<0.001
Duration of F.P. use in a year	< 5 years	288	12	3.0	276	1:00	
	≥5years	110	15	3.8	95	3.532(1.641,8.035)	0.001
Family history of hypertension	No	307	9	2.3	298	1:00	
	Yes	91	18	4.5	73	8.164(3.524,18.913)	<0.001
BMI	Normal weight	298	8	2.0	290	1:00	
	Overweight	100	19	4.8	81	8.503(3.591,20.134)	<0.001
Salt consumption	2tsp	216	9	2.3	207	1:00	
	1tsp	105	9	2.3	96	0.464(0.178,1.205)	0.115
	3tsp	77	9	2.3	68	1.412(0.533,3.742)	0.488

Multivariate logistic regression analysis result of pre-hypertension and hypertension

Those exposure variables with p-values < 0.25 were entered into a multivariable logistic regression analysis to fit the best model. Under non-modifiable risk factors, those women aged between 35-44 years 9.2(95%CI 3.235, 26.607) are more likely to develop prehypertension than the 14-24 years age group. Pills F.P. method user Women were 7.6(95%CI 3.756, 15.483) more likely to develop pre-hypertension than IUCD users. Regarding the duration of the family planning method, women who used family planning for greater than two years 2.7(95%CI 1.337,5.298) are more likely to develop pre-hypertension than less than two years of family planning user. Overweight women were 2.1(95%CI1.186, 3.626) more likely to develop prehypertension than women with average weight. Similarly, those variables with p-value < 0.05 were entered into a multivariable logistic regression analysis to fit the best model. Under non-modifiable risk factors, women aged 35-44 years 5,622(2.112, 15.021) are more likely to develop hypertension than those aged 14-34 years. Women who have a history of hypertension in their family have 4.333(95%CI 1, 644, 11.424) more likely to develop hypertension than those women who have no record of hypertension in their family. In modifiable risk factors, women who use oral contraceptives are 5,208(95%CI1, 482, 18,302) more likely to develop hypertension than those who use IUD. Besides the duration of the F.P. method, women who used the F.P. method for greater than five years were 2,598(1,112, 6,675) more likely to develop hypertension than their counterparts. In addition, overweight women were 3,551(1 317, 9,573) more likely to develop hypertension than normal-weight women.

Table 5: Multivariate logistic regression analysis pre-hypertension among women’s family planning users in Dedo woreda health facility, Jimma zone South West Oromiya, 2021(n=398).

Independent variable		Frequency	Pre-hypertension			Bivariate	Multivariate	P-value
			Yes	Percentage (yes)	No	COR (95% CI)	AOR (95% CI)	
Age in years	14-24	129	9	2.3	120	1	1	
	25-34	173	72	18.1	101	17(6.880,45.428)	18.5(6.737,50.936)	<0.001**
	35-44	96	41	10.3	55	18(6.930, 49.319)	9.2(3.235, 26.607)	<0.001**
Type of F.P. used	IUCD	168	45	8.3	123	1	1	
	Pills	95	48	12.8	47	4.742(2.723, 8.256)	7.6(3.756,15.483)	0.001*
	Injection	135	29	8.5	106	1.377(0,799,2.373)	1.6(0.850, 2.852)	0.152
Duration of FP used in years	< 2 years	204	37	9.3	167	1	1	
	2-5 years	84	38	9.5	46	3.7(2.134,6.515)	2.7(1.337,5.298)	0.005*
	> 5years	110	43	39.1	67	2.9(1.717,4.887)	1.96(1.141,3.672)	0.037
BMI	Normal weight	298	70	57.8	228	1	1	
	Over weight	100	52	12.6	48	3.382(2.101, 5.446)	2.1(1.186, 3.626)	0.011*

P-value of *< 0.05 and **< 0.01, AOR= Adjusted Odds Ratio

Variable in the final model age, FP method use, duration of FP method use and overweight

Table 6: Multivariate Logistic Regression of Factor Associated with Hypertension among women family planning user in Dedo worda Heath Facility, Jimma zone, Southwest Oromiya, 2021.

Independent Variable	Category	Frequency	Hypertension			Bivariate	Multivariate	p-value
			Yes	Percentage (Yes)	No	COR(95%CI)	AOR(95%CI)	
Age	14-34years	302	7	1.8	295	1:00	1:00	
	35-44 years	96	20	5.0	76	11.781(3.385,40.995)	5,622(2.112,15.021)	0.001*
Family history of Hypertension	No	307	9	2.3	298	1:00		
	Yes	91	18	4.5	73	8.164(3.524,18.913)	4,333(1,644,11.424)	0.003*
Type of F.P. method use	IUCD	169	5	1.3	164	1:00		
	Injection	134	7	1.8	127	2,583(0.761,8,769)	2,164(0.562,8,337)	0.262
	Pills	95	15	3.8	80	7,687(2,471,23,914)	5,208(1,482,18,302)	0.010*
Duration of FP Method use	< 5 years	288	12	3.0	276	1:00		
	≥ 5years	110	15	3.8	95	3.532(1.641,8.035)	2,598(1,112,6,675)	0.04*
BMI	Normal weight	298	8	2.0	290	1:00		
	Overweight	100	19	4.8	81	8.503(3.591,20.134)	3,551(1,317,9,573)	0.012*

P-value of * < 0.05 and ** < 0.01, AOR= Adjusted Odds Ratio

Variable in the final model age, family history of HPN, FP method use, duration of FP method use and overweight

CHAPTER SIX

6.1. Discussion

The prevalence of hypertension was found to be 6.8% (95% CI; 4.0-9.0), and the majority of pre-hypertension was found to be 30.7% (95% CI; 26.0-35.0). The prevalence found in this study is lower than the prevalence reported from Tanzania 37.2 (95% CI 34.0–40.6) (3). This variation could be due to the age category of the target population, setting, and sample size. This study was conducted in health facilities, but the study conducted in Tanzania was community-based.

Similarly, participants involved in this finding were lower than participants involved in Tanzania (3). Another study conducted in Uganda on the prevalence of pre-hypertension is 33.9%, which is greater than the current finding (22). The possible explanation for this discrepancy might be due to sampling size difference, study setting, and socio-demographic differences. Studies done in Uganda were involving a large sample size by using a survey. Similarly, another study conducted in Ethiopia on the pattern of blood pressure distribution and prevalence of hypertension and pre-hypertension is 18.1% and 37.2%, respectively (25). This was higher than from this study. The difference may be sample size, targeted population, setting, and study design. The study was conducted in Northern Ethiopia community based in rural and urban with a large sample size. In addition, the above finding study conducted in Zambia on Prevalence of Hypertension among Women of Child-Bearing Age is in urban hospital 18.6 % and rural hospital 6.7 %.(28). This is very high in urban hospitals but similar findings in rural hospitals compared to the current study. This difference might be the participant's lifestyle in urban Zambia study setting and study design and socio-demographic difference and endemic of hypertension in the area. The study was conducted in Zambia Urban hospitals and rural hospitals by using the WHO STEP survey.

The current study finding is nearly similar to the study conducted in Bangladesh, where the prevalence of pre Hypertension was 31.9% (23). Moreover, a study conducted in Tanzania showed the prevalence of hypertension at 8.5% (3).

In this study, women using the family planning method found that age between 35 and 44 was 9.2 times more likely to experience pre-hypertension than those in the age category of 14-24. Similarly, women between 35-44 years were 5.6 times more likely to develop hypertension than 14-24 years. This is support by studies conducted in Uganda (22), Bangladesh (23), Ethiopia (25), and Tanzania (3). As age increases, blood pressure becomes elevated due to reduced elasticity

vasculature, blood viscosity, etc.

Women using oral contraceptive family planning methods were AOR 7.6 and 5.2 more likely to develop hypertension when compared to IUCD family planning users. This supported by a study conducted in Chenchu Southern Ethiopia on Pattern of Fasting Blood Sugar, Blood Pressure and Body Mass Index Among Combined Oral Contraceptive (COC) Pills Users is There was a significant difference in mean arterial blood pressure (MAP) of COC users compared to controls (88.2 ± 8.48 vs. 86.0 ± 6.74 respectively, $P=0.039$ (12). The possible explanation might be the fact that COC can disturb blood pressure in some individuals. Estrogen on COC can affect the CV system by impacting CV risk factors such as the lipid profile. Oral contraceptives (O.C.s) alter the lipid profile through the genomic pathway, in which estrogen receptor alterations affect hepatic apolipoprotein upregulation by decreasing HDL and increasing LDL and estrogen in COC has an effect on RAAS that result in retention of sodium and water.

In the current finding, reproductive-age women using family planning for more than five years are more likely to have prehypertension and hypertension than those using family planning less than two years. This finding is supported by a study conducted in Chenchu, Ethiopia (12), Gahanna (32), Korea (35). This might be explained by the Chronic use of COCs, regardless of the concentration of estrogen, which can increase blood pressure both in normotensive and hypertensive women. On the other hand, in the current finding of those participants, being overweight was 2.1 times and 3.5 times more likely to experience pre-hypertension and hypertension than average weight. This is supported by a study conducted in Bangladesh (23), Uganda (22), Ethiopia (25), Tanzania (3), Nepal (28), and Zambia (29). This might be due to obese individuals having more cholesterol in their body, which tends to form plaque in the vasculature and hinder laminar blood flow by increasing blood pressure.

Moreover, in the current finding, those women have a history of hypertension in their family four times more likely to develop hypertension than their counterparts do. This is supported by a study conducted in Gonder, Ethiopia (36). The possible explanation might be a genetic vulnerability in their gene.

6.1.2 Limitation of the study

This study design is limited to facility-based and lacks a mixed approach for data collection. Since the study was cross-sectional, it is difficult to establish a causal relationship among independent and dependent variables. Moreover, do not incorporate all possible risk factors for

hypertension and pre-hypertension

6.2. Conclusion

The prevalence of hypertension among women of family planning users was 6.8% and prevalence of prehypertension was 30.7%. Identifying large number of pre-hypertension, alarming because various previous observational studies show that without appropriate interventions, many pre-hypertension individuals will progress to hypertension as they grow older. Non-modifiable risk factors for women's age were strongly associated with pre-hypertension and hypertension. On the other hand, modifiable risk factors like being overweight, hormonal contraceptive users, and duration were strongly associated with pre-hypertension and hypertension.

6.3. Recommendation

The results of this study show the need for a public health strategy for the prevention, detection, and treatment of hypertension and pre-hypertension in the Dedo woreda health facility and Jimma zone health facility. Dedo woreda health office should strengthen the existing monitoring tool for the quality of family planning services in improving women's health. Dedo woreda health facility health worker should encourage women to utilize modern non-hormonal contraceptives like IUCD. Dedo woreda health office jointly with Jimma zone health office should develop and arrange frequent capacity-building training on the prevention of non-communicable disease strategies for the health care providers. Dedo woreda health office, hospitals, health centers and health posts should organize family planning user mothers conference to create awareness in the prevention and control of CVD risk factors like hypertension.

Moreover, a large-scale longitudinal study will need to determine the effect of associated Factors on hypertension and pre-hypertension in Dedo woreda and Jimma Zone. Therefore, I recommend that health facilities screen and identify hypertension and pre hypertension as early as possible when the clients come for service. Similarly, effective counseling for type method should exhaustively address.

REFERENCE

1. Bissa S, Mossie A, Gobena T. Prevalence of Hypertension and Its Association with Substance Use among Adults Living in Jimma. *World J Med Med Sci.* 2014;2(1):1–11.
2. Awoke A, Awoke T, Alemu S, Megabiaw B. Prevalence and associated factors of hypertension among adults in Gondar, Northwest Ethiopia: A community based cross-sectional study. *BMC Cardiovasc Disord [Internet].* 2012;12(1):1. Available from: *BMC Cardiovascular Disorders*
3. Msemo OA, Schmiegelow C, Nielsen BB, Kousholt H, Grunnet LG, Christensen DL, et al. Risk factors of pre-hypertension and hypertension among non-pregnant women of reproductive age in northeastern Tanzania: a community based cross-sectional study. *Trop Med Int Heal.* 2018;23(11):1176–87.
4. Kim SJ, Lee J, Nam CM, Jee SH, Park IS, Lee KJ, et al. Progression rate from new-onset pre-hypertension to hypertension in Korean adults. *Circ J.* 2011;75(1):135–40.
5. Rossini L. Conflicting Citizenship and (Re) Active Zones in the Urban Areas : Confronting the Cases of Berlin and Rome Policies and Practices for Defining Processes. 2018;32(5):334–48.
6. Guwatudde D, Nankya-Mutyoba J, Kalyesubula R, Laurence C, Adebamowo C, Ajayi I.O., et al. The burden of hypertension in sub-Saharan Africa: A four-country cross sectional study. *BMC Public Health [Internet].* 2015;15(1):1–8. Available from: <http://dx.doi.org/10.1186/s12889-015-2546-z>
7. Asresahegn H, Tadesse F, Beyene E. Prevalence and associated factors of hypertension among adults in Ethiopia: A community based cross-sectional study. *BMC Res Notes [Internet].* 2017;10(1):1–8. Available from: <https://doi.org/10.1186/s13104-017-2966-1>
8. Asaye MM. Proportion of Maternal Near-Miss and Its Determinants among Northwest Ethiopian Women: A Cross-Sectional Study. *Int J Reprod Med.* 2020;2020(201 000):1–9.

9. Hinkosa L. BMC Pregnancy and Childbirth Risk factors associated with hypertensive disorders in pregnancy in Nekemte referral hospital, from July 2015 to June 2017, Ethiopia: case control study.” hypertensive disorders in pregnancy in Nekemte referral hospital. 2017;9(July 2015):1–9.
10. Muchanga MJS, Lepira FB, Tozin R, Mbelambela EP, Ngatu NR, Sumaili EK, et al. Prevalence and risk factors of pre-hypertension in congolese pre and post menopausal women. Afr Health Sci. 2016;16(4):979–85.
11. Singh N, Rahman SJ. A study on the prevalence and awareness of hypertension among women in the reproductive age group and the factors contributing to it in a rural area of Jorhat district, Assam. Int J Community Med Public Heal. 2017;4(9):3473.
12. Kofole Z, Haile D, Solomon Y, Girma E. Pattern of Fasting Blood Sugar, Blood Pressure and Body Mass Index among Combined Oral Contraceptive (COC) Pills Users in Chench, Southern Ethiopia: a cross-sectional study. 2019;1–16.
13. Maxson & Mitchell. 乳鼠心肌提取 HHS Public Access. Physiol Behav. 2016;176(1):139–48.
14. Son JS, Choi S, Lee G, Jeong S-M, Kim SM, Kim K, et al. Blood Pressure Change from Normal to 2017 ACC/AHA Defined Stage 1 Hypertension and Cardiovascular Risk. J Clin Med. 2019;8(6):820.
15. Haldar R.N. Global Brief on Hypertension: Silent Killer, Global Public Health Crisis. Indian J Phys Med Rehabil. 2013;24(1):2–2.
16. Shukuri A, Tewelde T, Shaweno T. Prevalence of old age hypertension and associated factors among older adults in rural Ethiopia. Integr Blood Press Control. 2019;12:23–31.
17. Ibekwe R. Modifiable risk factors of hypertension and socio-demographic profile in Oghara, Delta State; prevalence and correlates. Ann Med Health Sci Res. 2015;5(1):71.
18. Odunaiya NA, Louw QA, Grimmer KA. Are lifestyle cardiovascular disease risk factors associated with pre-hypertension in 15 – 18 years rural Nigerian youth ? A cross sectional

- study. 2015;1–10.
19. Hassen B, Mamo H. Prevalence and associated anthropometric and lifestyle predictors of hypertension among adults in Kombolcha town and suburbs , Northeast Ethiopia : a community- based cross-sectional study. 2019;1–10.
 20. Bosu WK, Moses J, Aheto K, Zucchelli E, Reilly ST. Determinants of systemic hypertension in older adults in Africa : a systematic review. 2019;7.
 21. Ribeiro CCM, Shimo AKK, Lopes MHB de M, Lamas JLT. Effects of different hormonal contraceptives in women’s blood pressure values. *Rev Bras Enferm.* 2018;71(suppl 3):1453–9.
 22. Nuwaha and Musinguzi: Pre-hypertension in Uganda: a cross-sectional study. *BMC Cardiovascular Disorders* 2013 13:101.
 23. Masuma Akter Khanam, Wietze Lindeboom et al Prevalence and determinants of pre-hypertension and hypertension among the adults in rural Bangladesh: findings from a community-based study
 24. Mulu shiferaw et.al. Anthropometric indices, blood pressure, and lipid profile status among women using progestin-only contraceptives: comparative cross-sectional study. <https://doi.org/10.1186/s12905-021-01178-8>
 25. Mekoya D Mengistu. Pattern of blood pressure distribution and prevalence of pre-hypertension and hypertension among adult in northern Ethiopia: disclosing the hidden number. <https://www.biomedcentral.com/1471-2261/14/33/2014>.
 26. Zambrana RE, Lopez L, Dinwiddie GY et al. Prevalence and incident pre-hypertension and hypertension in postmenopausal Hispanic women: results from the Women’s Health Initiative. *Am J Hypertens* 2014; 27: 372–381
 27. Mosha NR, Mahande M, Juma A et al. Prevalence, awareness and factors associated with hypertension in North West Tanzania. *Glob Health Action* 2017; 10: 1321279
 28. Chowa PE, Lin C, Goma F, South-Paul J. Prevalence of hypertension among women of child

- bearing age in Zambia. *Med J Zambia* 2011; 38:3 –8.
29. Khan RJ, Stewart CP, Christian P et al. A cross-sectional study of the prevalence and risk factors for hypertension in rural Nepali women. *BMC Public Health* 2013; 13: 55.
 30. Hendriks ME, Wit FW, Roos MT et al. Hypertension in sub-Saharan Africa: cross-sectional surveys in four rural and urban communities. *PLoS ONE* 2012; 7: e32638.
 31. de Ramirez SS, Enquobahrie DA, Nyadzi G et al. Prevalence and correlates of hypertension: a cross-sectional study among rural populations in sub-Saharan Africa. *J Hum Hypertens* 2010; 24: 786–795.
 32. George a asarel et al. The effect of hormonal contraceptives on lipid profile and the risk indices for cardiovascular disease in a Ghanaian community, *International Journal of Women's Health*. 3 Jun,2014.
 33. Muluken Fekadie Zerihunet al. Changes in body weight and blood pressure among women using Depo-Provera injection in Northwest Ethiopia. *BMC Res Notes* <https://doi.org/10.1186/s13104-019-4555-y>
 34. Hyejin park et al. Association between oral contraceptive use and risk of hypertension and pre hypertension in a cross sectional study Korean women. *BMC Womens Health* 2013

Annex I: Research Consent Form

Research Topic: -Assessment of prevalence of pre-hypertension and hypertension in women family planning user in Dedo woreda.

Dear Sir/ madam;

“Good day”. My name is Lensa Dula. I am Master’s Degree in general Public Health student in institute of Health department of Epidemiology, Jimma University.

As part of our academic requirements, I am expected to conduct assessment of prevalence of pre-hypertension and hypertension and associated Factor in F.P. user women family planning user. The information that I will obtain from you is very useful for Jimma Zone Health Office and Dedo Woreda Health Office and Health Planner in the area of health in reproductive age women.

I assure you that the information that you will give to me will be kept confidentially. There is no any harm to you by giving this information except the time you will spend for the response of the question and physical examination. This will take about 15-20 minutes and you have full right to participate or to refuse or to withdraw in the meantime.

Are you willing to participate to fill this questionnaire?

Yes_____ signature (continue) _____ no_____ (stop)
Thank you for your cooperation!!!

Annex II: Questionnaire

Research Topic: Assessment of prevalence of pre-hypertension and hypertension in women family planning user Dedo woreda.

Each question is provided with a multiple choice and blank space. Encircle the appropriate response or write on the space provided.

S.No	Questions	Answers	Remark
Section I: Socio -demographic and data			
1.1	Age	_____	
1.2	Educational status	A, Illiterate B, 1-8 grade C, 9-10 grade D, 10 ⁺¹ - 10 ⁺³ E, Diploma/Level IV F, Degree G, Master degree or above	
1.3	Marital status	A, Married B, unmarried C, divorced D, Widowed	
1.4	Occupation	_____	
Section II: Family Planning Method use and Duration			
2.1	Are you using Family Planning method?	A, Yes B, No	
2.2	If your answer is yes which method do you used?	A Pills B, Injection C, Implant D, IUCD	
2.3	For how long did you used?	_____	
Section III: Physical Measurement			
3.1	Blood pressure	1 st 5 min _____ 3 rd 15 min _____	
3.2	Weight	In Kg _____	
3.3	Height	In cm _____	

Section IV: Family Disease history			
4.1	Have you a family history of hypertension disease?	A, Yes B, No	
Section V: Medical history			
5.1	Do you have hypertension previously?	A, Yes B, No	
5.2	If your answer is yes, For Q 5.1. Are taking treatment?	A, Yes B, No	
5.3	Do you have any chronic illness?	A, Yes B, No	
5.4	If your answer is yes which type of chronic disease do you have?	A, Diabetes Mellitus B, High Cholesterol	
Section VI: Diet history			
6.1	How many table spoon butter did you add in your daily meal?	A, 1tsp B, 2tsp C, 3 and > 3tsp D, No	
6.3	How many table spoon salt did you add in your daily food and coffee?	A, 1tsp. B, 2 tsp. C, 3 and > 3 tsp D, No	

Thank You for Participation!

Remark

In section V the multiple choose indicate that

- 1tsp butter consumption=low
- 2tsp butter consumption = medium
- 3 and >3tsp butter consumption = high
- 1tsp salt per day= low

- 2tsp salt per day = medium
- 3 and > 3tsp salt per day= high

ANNEX I:

Foormii Walii Galtee Qo’annoo

Mata Duree Qo’annoo:- Qo’annoo Facaatii Haalota Dhiibbaa Dhiigaan Duraa Fi Dhiibbaa Dhiigaa Dubartoota Fayyadamtoota Karoora Maatii.

Obboo/Aaddee;-

Akkam jirtan? Maqaan kiyya Leensaa Duulaa yommuu ta’u, barattuu Maastarsii barnoota fayyaa Hawaasaa Yuunivarsiitii jimmaati.

Haaluma kanaan akka dippaartimantii kanaatti qo’annoo waa’ee facaatii haalota dhiibbaa dhiigaa dura jiraniif fi dhiibbaa dhiigaan wal qabatanii dubartoota karoora maatii fayyadamaa jiran irratti qo’annoo waanan gaggeessuuf adeeffannoo gahaa isin irraa argachuu fi safarii fiizikaalawaa qaamaa isiniif gochuu barbaada. odeeffannoon isin naaf kennitan kunis miidhaa tokkolee kanaan hin qannee fi Waajjira Eegumsa fayyaa godina Jimmaa fi waajjira eegumsa Fayyaa Aanaa Deedootiif Baayyee murteessaadha,

Dabalataanis odeeffannoon isin irraa argadhu kana keessatti maqaan keessan kan hin katabamne fi odeeffannoon isin naaf kennitan hundi isaa qaama sadaffaa biraatti dabarfamee kan hin kennanme ta’ee icciitiin keessan kan eegameedha. Yeroon odeeffannoo kana isin irraa fuudhus yoo guddate daqiiqaa sooddoma kan hin caalle yommuu ta’u, gaaffii kana deebisuu dhiisuufis ta’ee walakkaatti dhaabuuf mirga guutuu qabdu.

Gaaffii kana deebisuuf fedhii qabdu? Eeyyee

lakki

Signature _____

Date _____

Deeggarsa keessaniif galatoomaa!

Mata Duree Qo'annoo: - Qo'annoo Facaatii Haalota Dhiibbaa Dhiigaan Duraa Fi Dhiibbaa Dhiigaa Dubartoota Fayyadamtoota Karoora Maatii.

Tokkoon tokkoo gaaffii kanaa filannoo kan qabu yommuu ta'u, deebii gaaffii kanaatti mare ykn bakka duwwaa irratti guuti

Lakka	Gaaffii	Deebii	Remark
kutaa I. Ragaa bu'uraa Umaata			
1.1	Umuriin kee meeqa?	_____	
1.2	Sadarkaan barnoota keetii meeqa?	A, Hin baranne B, Kutaa 1-8 C, Kutaa 9-10 D, 10^{+1} - 10^{+3} E, Diploma/Level IV F, Degree G, Master degree fi isa ol	
1.3	Haalli gaa'ila kee maal fakkaata?	A, Kan eerumte B, Kan hin eerumne C, Kan hiikte D, Kan irraa du'e	
1.4	Hojiin maali?	_____	
kutaa II: Karoora maatii iti fayyadamaa gosa fi itti fayyadamaa yeroo			
2.1	Yeroo ammaa kana karooraa maatii fayyadamaa jirtaa?	A. eeyyee B. lakki	
2.2	Deebiin gaaaffii 2.1 eeyyee yoo ta'e karooraa maatii gosa kam fayyadamaa jirta?	A. A Piilsii B. Liilmoo C. Implaanolii D. IUCD	
2.3	Karoora maatii yeroo hamam fayyadamtee?	_____	
kutaa III. Qorannoo Qaama			
3.1	Dhiibbaa dhiigaa	1 ^{ffa} 5 min _____ 2 ^{ffa} 15 min _____	
3.2	Ulfaatina	In Kg _____	
3.3	Dheerinaa	In cm _____	
kutaa IV :Seenaa Haala Fayyaa Maatii			
4.1	Maatii kee keessa dhiibbe dhiibbaa dhiiga kan dhukkubsate beeku jira?	A. eeyyee B. lakkii	

Section V: Seenaa haala fayyaa ammaa			
5.1	Dhukkuboota ciccimmo qabda? (fkn kan akka suukkara kkf)	A. eyyee B. lakkii	
5.2	Dhukkubaa dhibaa dhigaa qebeda ?	A. eyyee B. lakkii	
5.3	Gaffi 5.2 debiinkee eyyee yoo ta'e. Qorichaa fudhataa jirta?	A. eyyee B. lakkii	
5.4	Deebiin gaaffii 2.2 eyyee yoo ta'e dhukkuboota akka armaan dhiyaatan keessa isaa kam qabda?	A, Dhiibbe suukkara B, High Cholesterol	
kutaa VI: Haala Seenaa Sooranaa			
6.1	Kanan duraa guyyaatti dhaadhaa falana meeqa nyaata kee keessatti fayyadamta?	A.falana tokko B. falana lamaa C. falana sadii fi isa ol	
6.3	kan duraa ashaabboo falana meeqa guyyaatti nyaata fi buna dhugduu keessatti fayyadamta?	A. falana tokko B.falana lamaa C.falana sadii fi isa ol	

Yaadachiisa

Kutaa 5ffaa keessaattii filanoon agarsiisuu Kun

- Dhaadhaa falana tokko fayyaadamuun = gad-aanaadha
- Dhaadhaa falana lamaa fayyaadamuun = gidu-galeessaa
- Dhaadhaa falana sadii fi isaa ol fayyaadamuun= baay'eedha (ol ka'aadha)
- Guyyaatti ashaaboo falani tokko = gad-aanaadha
- Guyyaatti ashaaboo falani lamaa = gidu-galeessaa
- Guyyaatti ashaaboo falani sadii fi isa ol= baay'eedha(olka'aadha)

GALTOMII!!