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WOLKITE UNIVERSITY

COLLEGE OF MEDICINE AND HEALTH SCIENCES

DEPARTMENT OF PUBLIC HEALTH

**HIGH RISK FERTILITY BEHAVIOR AND ASSOCIATED FACTORS
AMONG MOTHERS IN WOLKITE TOWN, GURAGE ZONE,
CENTRAL ETHIOPIA**

**THESIS FOR FULFILLMENT OF MASTER OF PUBLIC HEALTH
IN REPRODUCTIVE HEALTH**

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Approval of Thesis Research for Defense

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ABBREVIATIONS AND ACRONYMS

ANC	Antenatal Care
AOR	Adjusted Odd Ratio
ARI	Adjusted Relative Ratio
BDHS	Bangladesh Demographical Health Survey
CHW	Community Health Worker
CSA	Central statistical Agency
DHS	Demographic and Health Surveys
EDHS	Ethiopian Demographical and Health Survey
ETB	Ethiopian Birr
HRFB	High Risk Fertility Behavior
LBW	Low Birth Weight
LIMCs	Low and Middle-Income Countries
MMR	Maternal Mortality Rate
MSA	Measure of Sampling Adequacy
PCA	Principal Component of Analysis
SDG	Sustainable Development Goal
SNNPRS	South Nation Nationality People Regional State
SPSS	Statistical Package for the Social Sciences
SSA	Sub- Saharan Africa
UNICEF	United Nation International Children Emergency Fund
VIF	Variance Inflation Factors
WHO	World Health Organization

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ABSTRACT

Background: High risk fertility behavior is a serious concern of public health. These risk factors result in premature birth, reduced birth weight, anemia, perinatal death, increase need of caesarean sections and unsafe abortion. Also result in increased chance of maternal and child mortality and hindering economic growth of individual and country. In addition to commons socio-economic-demographic variables, individual beliefs are introduced as new.

Objective: To assess High risk fertility behavior and associated factors among mothers in wolkite town, Gurage zone, central Ethiopia 2024.

Methods: A community based cross sectional study was conducted among 300 women in Dec 2024 using systematic random sampling. Data were collected through interviews. One or more of condition listed below was classified as HRFB; giving birth at < 18 or >34 years (old primi), a birth interval of < 24 months or having > 3 children. HRFB was coded as "1" and non-HRFB as "0". Epi data version 4.6 was used for data entry and analysis was done by SPSS version 25. Variables with p-value < 0.25 in bivariate were moved to multivariate analysis to control confounding factors. P-values and AOR <0.05 with 95% CI were used to state the significance.

Result; Findings indicated that 74.1% (CI:68.3-79.7) of the women had experienced HRFB. The results show that single women are at lower odd of engaging in HRFB compared to their married counterpart (AOR = 0.732 CI: 0.0113-0.472). Women who were non-autonomous had higher odd experiencing HRFB (AOR=2.47,CI:1.349-4.53) compared to those with autonomous. Similarly, Poor knowledge of contraception increases the prevalence by 2.42 times (AOR= 2.42 CI:1.125-5.24). Also, Belief on having a large family is often seen as symbol of wealth and divine blesse is significantly associated with HRFB (AOR =2.16 CI:1.23-3.79).

Conclusion; This study concluded that the prevalence of HRFB was higher. Marital status, autonomy, belief on large number of children and knowledge of contraception were identified as factors, increase health education, behavioral change education communication should be given attention to the reduction of the magnitudes as well as associated factor.

Keywords: High risk fertility behavior, Authority, Birth interval.

1 Introduction

1.1 Background

Women's high-risk fertility behavior, including actions < age 18 or > 34 childbearing, > 3 children and close birth interval (1). An estimated 800 women lose each day to avoidable complication linked to gestation and delivery, most in country with low and middle income level (2).

By 2030, The sustainable development goal 3.1 average global target is an maternal mortality of < 70/100,000 live births(3) and As part of the supplementary public target no country is expected MMR exceeding 140 per 10000 live birth (4). Sub sharia Africa recorded the highest maternal mortality in 2015, with estimated 546 maternal deaths per 100,000 live births (5). Ethiopia remain among the countries with the highest mortality, reporting 412 deaths per 100,000 live births according to the 2016 EDHS, a significant proportion of this death were attributed to high risk fertility behavior (6 ,7).

With the population increase a rapid pace, with the total fertility rate reported at 2.5 birth per women in Ethiopia (8) HRFB, have been scientifically linked to have negative impact on both maternal and child's health(9). On the other hand, advanced motherly age has association with premature birth, reduced birth weight, perinatal death, caesarean sections and spontaneous miscarriage (10-12) various complications, also, short birth interval and high parity carries the threat of numerous unfavorable child and motherly health issues.(13, 14). These risk factors also affect the survival chances of a mama and her child (15, 16).

A study carried out in east Africa estimated that 76% of the population engaged in high-risk fertility behavior(17). Furthermore, the intervention efforts have encountered difficulties due to insufficient information regarding the extent and prevalence of high-risk fertility behavior. Women and child mortality rates continue to be elevated in this region, largely due to factors such as early marriage, sexual violence, and negative sexual attitudes, the challenges faced by women throughout their lives obstruct economic development and diminish the advancement of maternal health services. (18, 19, 20).

1.2. Statement of the problem

Worldwide, a significant number of women have been suffering in HRFB mainly in the developing countries including Ethiopia. Maternal HRFB is one of the indicators of countries economy as well as health conditions. Overall, 77% of currently married women have the potential for having a high-risk fertility behavior, with 31% falling into a single high-risk category and 45% falling into a multiple high-risk category. Somehow in the similar way the highest prevalence of numbers of births (74.54%) was recorded in Chad with the lowest in South Africa (32.15%) (20, 21). Globally, 20% young women aged 20–24 were married as children, with an estimated 16 million 15–19-year and 777,000 10–14-year-olds giving birth in undeveloped countries (22).

HRFB is the major problems which lead to maternal and children mortality rate that manifest in negative consequence of low education attainment in low- and middle-income countries. When girl's dropout of school, they are much more likely to marry as children and they may not yet be ready to be wife and mothers. These negative impacts have large economic losses (future life time earnings of labor force) estimated at united states of America \$15 trillion to united states of America \$30 trillion (23). In addition to above outcome HRFB Also affect psychosocial linkages, health conditions and every days circumstances (26).

The study identified in India, the frequency of high risk fertility behavior (31.9%), single risk (25.5%) and multiple high risk fertility behavior (6.4%) was higher in women (24). According to the study revealed in South Africa and SSA about 46% and 37% of women in South Asia and sub sharia Africa were married before their 18th years old respectively (25).

The study conducted in Ethiopia, 40 % of young women are married before the age of 18, and 14 % marry before their fifteenth birthday (27).

Ethiopia stands as the 12th most populous nation globally and the second most populous in Africa, with a yearly population growth rate of 2.57% (29). This significant growth is largely attributed to early pregnancies and childbirth. The latest Ethiopian Demographic and Health Survey reveals that 13% of adolescent girls aged 15 to 19 are either pregnant or have already

given birth. The incidence of early pregnancy is notably higher in rural areas, where 15% of girls face this reality, compared to just 5% in urban regions (28).

As reported by the 2016 Ethiopian Demographic and Health Survey, Ethiopia is among the nations with the highest maternal mortality rates, recording 412 deaths per 100,000 live births each year. A large proportion of these fatalities are linked to high-risk fertility behaviors (HRFB)(27). These risks have far-reaching effects, not only jeopardizing public health but also hindering economic growth and weakening the healthcare infrastructure. In developing nations like Ethiopia, the understanding of HRFB is crucial, especially due to the growing economic constraints, insufficient healthcare access, and the widespread occurrence of child marriages (17).

The Sustainable Development Goal focuses on averting maternal death, with the target of achieving less than 70 maternal deaths per 100,000 live births by 2030. Moreover, early marriage presents significant barriers to effective child spacing and family planning. In numerous countries, the youngest mothers experience the shortest birth intervals, a situation that is widely recognized as reinforcing cycles of poverty and inequality, particularly in disadvantaged, less educated, and rural communities. (3,30)

Nevertheless, the intervention has been challenged mainly due to inadequate information and understanding about the severity and prevalence of high-risk fertility behavior. In order to decrease, it is crucial like maternal education, socioeconomic improvement and adequate infrastructure in health system in low- and middle-income countries (1, 18-20).

To my knowledge and search evidence, majority of studies about high-risk fertility behavior in Ethiopia focused on determining the impact of high-risk fertility behavior on maternal and child health outcomes rather than underlining factor. Also, majority of studies done by secondary data and few of the studies are facility based due to those reason. this study was filling those gaps by implementing mothers' interviews for data collection with in community. Which is important to minimize information bias and increase its representativeness, validity and completeness of previous studies. Thus, the aim of this study was to identify the factors associated with high risk fertility behavior and was assessed

individual beliefs as determinants (this independent variable not assessed well by other study but it is a crucial factor of fertility) among women of reproductive age in Wolkite town, 2024.

Therefore, this study was aimed to answer the following research questions. What is the magnitude of high-risk fertility behavior among women of reproductive age in Wolkite town in 2024? What are the associated factors that contribute to high risk fertility behavior?

The study will be providing timely information to program planners and policymakers to reduce the consequences of high-risk fertility behavior and associated factors of high-risk fertility behavior among reproductive-age women in Gurage Zone Wolkite town in 2024.

2 LITERATURE REVIEW

2.1 Prevalence of HRFB

Globally the total fertility rate is decline, but rapid increasement of population has observed in developing nations like SSA is expected to increase from 840 million in 2010 to approximately 1.4 billion by the year 2030.(33). Contradict to this most of African nation there is declining of natural resource, shortage of basic infrastructure such as school, health facilities, housing and increased unemployment because of inadequacy of an appropriate strategy and policy around demography and population to maintain fertility rate (34).

HRFB is a critical concern of public health that may be due to unmet need of contraceptive, teenage marriage, poor health system (1).

Study finding in India show that, 32% of married women likely to engage in HRFB. One four of them indicated they had a single HRFB, and six percent indicated they had multiple HRFB. also show that short birth intervals of less than 24 months accounted for 13% of all HRFB cases, followed by higher live birth rates of more than 39% (24).

A cross-sectional study conducted among women of reproductive age in Bangladesh found that approximately 67% of participants experienced high-risk fertility behavior (HRFB). Of these, around 45% were exposed to a single risk factor, while 22% were subjected to multiple high-risk factors. Factors significantly associated with an increased likelihood of HRFB included being aged 35–49 years, having a normal childbirth history, experiencing unwanted pregnancies, identifying as Muslim, and not using any contraceptive methods. Conversely, higher educational attainment by both women and their partners was linked to a decreased risk of HRFB (35).

Sub-Sahara ; - The highest rate of births at the young age of 18 years as an HRFB around 2% and the highest magnitude of <24 month interval (30.78%), had at Chad but South Africa had the lowest rate (0.0%)birth at less than 18 and lowest magnitude for short birth intervals (8.5%)(35) . These indicate the difference between the two countries socio demography changes one of contributes factor of HRFB.

According to a study conducted in South Asia and Sub Sahara Africa around 46% and 37% of women were married before turning 18 years old, respectively (25). This result is in line with the studies conducted in Bangladesh, the rate of first pregnancy at a younger age (under 18) is as high as 35% (26).

In Ethiopia, A multi-level analysis study by using EDHS data, HRFB prevalence was 76. % widespread. The HRFB in Somalia region was the highest near 86% and the HRFB in Addis Ababa was the lowest 64% (48). In the Afar , the maternal HRFB was also 86.3% (36).The prevalence of HRFB was near 66.% in urban women and around 77% in rural women, respectively (37).Therefore, because HRFB varies across Ethiopia due to geographic variation. It is beneficial to comprehend the primary or root causes of these health problems.

2.2 high risk fertility behavior contribute factors

2.2.1. Socio-demographic characteristics.

The association between high risk fertility behavior and education is scientifically plausibility as education plays a critical role in outcome. Educated women are to have accurate information about reproductive health, understand the health risk of early childbearing short birth interval and high parity. furthermore, education linked to improved socioeconomic status and autonomy and increase utilization of maternal health service which contribute to reduce high risk fertility behavior.

Findings were conclude in studies conducted in Ethiopia, women attended secondary and elementary education experienced a round one third of reduction in HRFB, compared to those who did not (17). In addition to this, mothers who not attend college had a 66% higher engagement to HRFB than mothers who attend college (38).

The association of marital age and HRFB is also factors, particularly where early married increase having longer reproductive age span and low educational attainment lead to the high occurrence of outcome. The other crucial factor is child bringing of women when compared to women who start having children between the ages of 18 and 34 or older, those who become mothers before the age of 18 risky for HRFB. It is also higher among women mother

give birth at later 34 year. In fact, HRFB are crucial in raising maternal mortality especially developing countries, woman who are married are 73% experienced to have an HRFB than those who are single. Urban mothers were 26% less likely than rural mothers to engage HRFB (17).

similarly, study's conclusion in East Africa conclude that mothers in rural area was 26 % more risky than mothers in urban to experience HRFB (35).

Employment is one of the contribute factor, more than half of risks are attributed to pregnant women who are unemployed. Women who do not have a work are around one third more likely to get HRFB than those who do (31).

This concept also strengthen by a study conducted in Ethiopia, HRFB was associated with unemployment ,approximately half of women who did not put in any hard work compared to 46% of women who did (17).

2.2.2. Reproductive health characteristics

The association between high risk fertility behavior and reproductive health Character is direct influence, character such as limited access to use use contraception more likely to have closely spaced birth and more child. Also increase unintended pregnancy lead to HRFB

The study conducted at Bangladesh found that mother did not use family planning had a 37.% odd of having high risk trait compared to those who use contraceptive (26).

Similarly, research in Ethiopia found that women who were not using contraceptives had a 25% higher likelihood of engaging in HRFB compared to those who were using contraceptives (17). These studies suggest that utilizing of contraceptive may minimize unwanted pregnancy and gives large birth intervals and can ability to limit birth of child.

In the East Africa region, women who did not receive antenatal care contact were 19% more likely to experience high-risk fertility behavior compared to those who did (35). Similarly, in Ethiopia, women who lacked ANC follow-up were also more likely to have,those who did not use antenatal visits than who did. women with no follow-up of ANC 25% are higher than those with follow-up (17, 37).

According to studies conducted in east African nations, home birth mothers had near to half the risk of having a high-risk pregnancy than hospital birth mothers(35).

Study conducted in Ethiopia, in Afar region the HRFB is 72 % more likely to occur ,when giving birth at home than in a medical facility (17).

Maternal pregnancy type, the study done in Ethiopia revealed a important positive correlation between pregnancy type and HRFB ,unwanted pregnancies had a 40 % higher contribution than women with desired pregnancies for HRFB prevalence (17) .

Similar finding were observed in other study Twenty five percent of women who do not want to become pregnant are more likely to have HRFB than to desire to become pregnant (37).

Women's involvement in making health decisions is essential to lowering HRFB. But in SSA, decision making is very low and their husbands make decisions regarding their own health without asking for their consent ,it fate in incensement of the occurrence of HRFB(32) .

Women from six African nations complained that their husband only made decisions pertaining to their health between 22% and 75% of the. Burundi and Mozambique score poorly 22% compared to Burkina Faso's 75% (39).

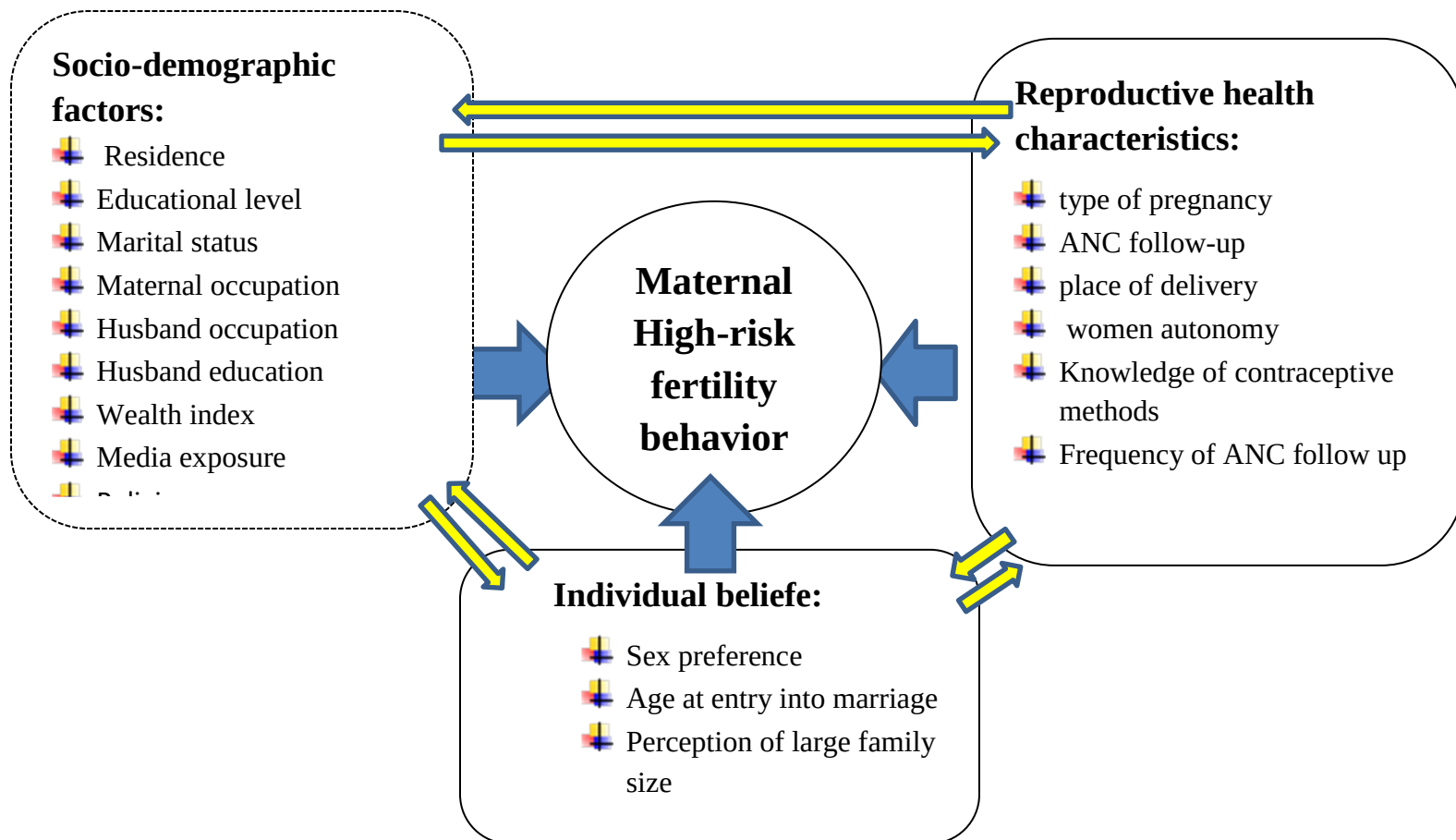


Figure 1; Conceptual framework of HRFB and associated factors among women of reproductive age at Wolkite town developed after review of literatures ((3),(37),(8, 17),(35),(21)).

1.3. OBJECTIVE

1.3.1. General objective

- To examine high-risk fertility behavior and associated factors among mothers in Wolkite town, Gurage zone, Central Ethiopia, 2024.

1.3.2. Specific objective

- To determine prevalence of high-risk fertility behavior among reproductive age women at Wolkite town
- To identify factors, attribute to high risk fertility behavior among reproductive women in Wolkite town

1.4 Research questions

- ✓ What is the magnitude of at least one high risk fertility behavior among women of reproductive age in Wolkite town Gurage Zone Central Ethiopia in 2024?
- ✓ What are the factors that contribute to at least one high risk fertility behavior in this study area?

1.5. Significance of the study

Health strategies and policy regarding to lowering of maternal and child mortality as well morbidity is based on understanding of the prevalence and the factor that contribute to high risk fertility behaviour, Accordingly, the results of this study will contribute to the formulation of policies and strategic plans, including those related to population control, that aim to minimize high-risk fertility behaviors in the study area. They will serve as a valuable resource for policymakers in designing evidence-based interventions. Moreover, the findings are expected to assist health program managers in evaluating the current status of maternal and child healthcare services and making necessary improvements.

In addition to these contributions, the study will help raise awareness among public health authorities and other relevant stakeholders about HRFB. It will also encourage efforts to strengthen basic maternal healthcare services. Finally, the study's findings provide background knowledge and direction for researchers conducting additional research for future.

1.6 Operational definition

High risk fertility behavior: the occurrence of at least one or more of from 4 condition listed below classified as HRFB;- giving birth at ages of less than 18 years, giving birth at ages of more than 34 year , birth gap of below 24 months, and birth orders of further than or equal to 4 children According to mini EDHS 2019 ., the code was "1" for any HRFB and "0" for non HRFB (18).

Single HRFB: a mother reported to have been either of high-risk fertility behavior there is either younger age < 18 years, or older age above 34, or birth interval below 24 months, or having child greater than /or equal to four children (18).

Multiple HRFB: refers as two or more high risk fertility behavior(18)

Media exposure: media exposure in this study was defined as receiving maternal health related information through radio, tv, and printable media about maternal health related condition accordingly the schedule at least once a week (17).

Good knowledge A good level of knowledge was assigned to participant whose score met or exceeded the mean on eight contraceptive method knowledge. The answer to each was coded as a "1" for "yes" and "0" for "no"(17) .

Poor knowledge Women who scored below the mean were classified as having "**poor knowledge.**"(17).

High birth: latest child's birth ≥ 4 . (31).

Women's autonomy: **Women's autonomy** refers to their capacity and freedom to make independent decisions and take action, including their ability to articulate strategic choices and access and control resources. It encompasses the right to make decisions about family matters and personal health (32).

To assess women's autonomy, four key decision-making areas were evaluated: Decision-making on maternal health. Decision-making on household purchases, Decision-making on visiting family, Decision-making on the health of children Based on these questions, women who reported a mean or above score of making decisions either independently or jointly with

their husband were considered to have **high decision-making power (autonomy)** and were coded as "1". Those who did not participate in decision-making were categorized as having **low decision-making power (non-autonomy)** and were coded as "0".

Wealth index : The wealth index, is a parameter of the status of living for urban households based on the kind and number of consumer good they have , from a TV to bicycle or Bajaj or car, and housing characteristic like toilet type, water source, flooring materials (was used 18-question) as similar to Mini EDHS 2019 , The answer to each was coded as "1" for "ownership/yes" and a "0" for "non-ownership/no." Those scores rank each woman in to 3 group (low wealth index, medium wealth index, high wealth index) by using PCA (principal component analysis).

Large family size: A family has mother, father and more than 4 children (31).

Short birth interval: interbirth gap below 24 months from previous birth, (1) .

3 Method and material

3.1 STUDY AREA AND PERIOD

Study area and period The Gurage zone, wolkite town, in central Ethiopia, was the location of the study. One of the zonal towns in central Ethiopia is Welkite. It is located 151 kilometers southeast of Addis Ababa. Geographically, the town is situated at latitudes and, elevation between 1935 and 1910 meters above sea level. Seven kebeles make up the town: Menaheria, Addis hiwot , Edgetchora, Edgetber, Selam ber, Buchach , and Gubre administrative kebeles.

According to the Gurage zone Health Department's fiscal annual performance report for (2023/24), wolkite town's population is 90166, from those 20738 are reproductive age women..

Since 2024, the study will be conducted in a town that offers maternal and child health services. It has a total of 18 health facilities, including 13 medium-sized clinics, 3 health centers, 1 health post, and 1 teaching and referral hospital

3.2 Study design

A community-based cross-sectional study was conducted from December 1 to 30, 2024

3.2.1 Source of population

All mothers of (15-49 years old with at least one birth experience) at Wolkite town, 2024.

3.3.2 Study population

The study population for this study was mothers in the wolkite town during the study period and fulfilling the criteria. Of inclusion

3.4. INCLUSION AND EXCLUSION CRITERIA

3.4.1. INCLUSION CRITERIA

Reproductive age women with one birth experience, who live previous 6 month and who were in wolkite town while collecting the data, 2024.

3.4.2. EXCLUSION CRITERIA

Individuals presenting with current birth history was still birth and women gave birth not alive during the period of data acquisition were systematically omitted from participation.

3.5. SAMPLE SIZE DETERMINATION

The sample size for the study was determined using Epi-Info Version .7. software using sample size estimation for a single population survey and using the assumptions: confidence level of 95%, population size >10 000, expected prevalence or proportion of reproductive-age women who had at least one HRFB of 76.9% from one study analyzed 2016 Demographic and Health Surveys (DHS) data in Ethiopia, and 5% acceptable margin of error.(17)

Therefore, the final minimum sample was included in the study equal to 273+10% non-response rate=300. (17)

$$n = \frac{(Z_{\alpha/2})^2 P (1-P)}{d^2}$$

whereas,

- p=76.9% (expected frequency) population proportion of HRFB the study was done regional level in SNNPS, Ethiopia
- Confidence level is 95% ($Z_{\alpha/2}$)
- d = the marginal error (Confidence limits) of 0.05 with 95% confidence level

$$n = \frac{(1.96)^2 p(1-p)}{d^2}$$

$$n = \frac{3.8416 * 0.769(1-0.769)}{0.05^2}$$

The result equals to 273,

then i used 10% of non-respondents rate that means 27.

Total sample was 300.

Table 1 Sample size determination of HRFB with associated factors by using double proportion formula (for 2nd objective)

S.N O	Variables	HRFB in unexposed and exposed - group	CI	Power (%)	Odds ratio (AOR)	Sampl e size	Sample size with non- respondent rate of 10%
1	Mother Primary education	33.9% 66.1 %	95%	80 %	2.8	86	95
2	Marital status	63% 37 %	95 %	80%	.3	130	143
3	Access to media	40% 60 %	95 %	80 %	3	214	172
4	Follower of ANC	65% 35 %	95 %	80%	.28	98	108

SO, I was selected the objective one as sample size. This means

$$n= 300$$

3.5.1 Sampling technique /procedure

According to the Gurage zone Health Department's fiscal annual performance report for 2023/24, the total number of populations in the wolkite town is 90166 and 20738 is reproductive-age woman. Thus, the determined sample size was apportioned to each kebele proportionally, following a standard allocation formula reflective of the population distribution across the kebeles. For Menaheriya , the total number of mother is 3635, then the number of mothers those selected for the study was calculated as $n = 3635 \times 300 / 20738 = 53$, for Selamber kebele $n = 3759 \times 300 / 20738 = 54$, for Edgetchora kebele $n = 3289 \times 300 / 20738 = 48$ and for Edgetber $n = 3356 \times 300 / 20738 = 48$, for Adisshiwot kebele $n = 3373 \times 300 / 20738 = 49$ and for kebele Buchach $n = 859 \times 300 / 20738 = 12$. kebele Gubrye $n = 2467 \times 300 / 20738 = 36$ therefore 300 mothers was enrolled in the study.

Using a systematic random sampling technique with a k value for Menaheriya $k = 3635 / 300 = 12$, for Selamber kebele, $k = 3759 / 300 = 13$, for Edigetchora, $k = 3259 / 300 = 11$, and for Edigetber $k = 3356 / 300 = 11$,For Adis hiwot kebele $3373 / 300 = 11$,for kebele Buchach $n = 859 / 300 = 3$,for Gubrye $n = 2467 / 300 = 8$

From each kebele, the initial participant was selected using a lottery-based randomization technique. In instances where multiple eligible women were present within a single selected household, the same lottery method was employed to randomly choose one respondent.

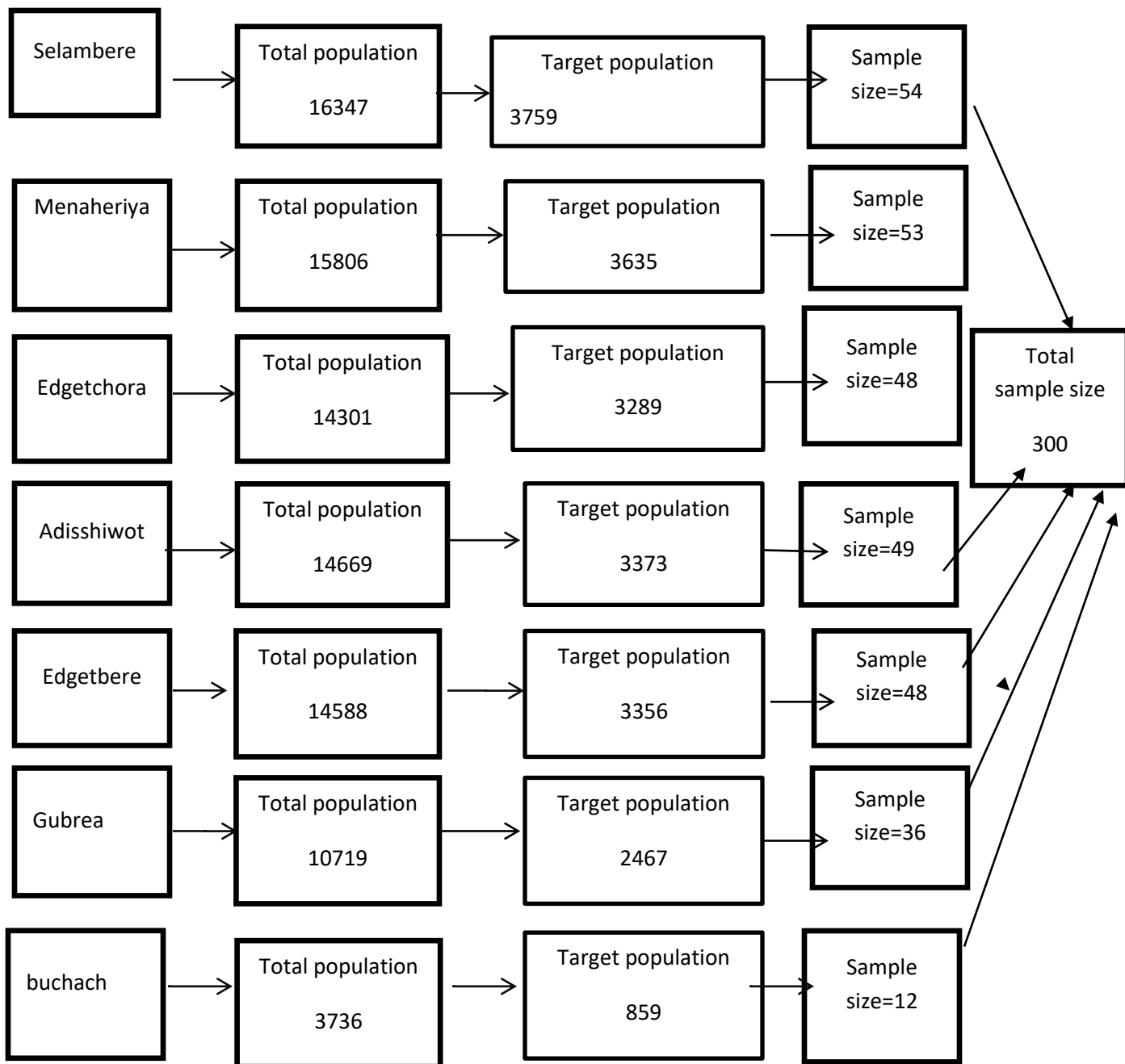


Figure 2 Schematic presentation of sampling technique

3.5.2 Ethical consideration

From Wolkite University Ethical approval paper was received. In addition, a support letter was secured from the Gurage Zone Health Department and the Wolkite Town Health Office. Before data collection, participants were given a clear explanation of the study's purpose and process. Verbal consent was obtained from each participant, who joined the study voluntarily. They were also informed that they could withdraw at any point without facing any consequences. Throughout the data collection, participants' privacy and confidentiality were carefully protected. To ensure anonymity, each questionnaire was labeled with a unique identification number instead of personal details.

3.4. VARIABLES

3.4.1. DEPENDENT VARIABLE

Maternal high-risk fertility behavior

3.4.2. INDEPENDENT VARIABLES

Sociodemographic and economic factors,

Maternal occupation # Husband occupation

Media exposure # Husband education

Educational level # Marital status

Wealth index

Reproductive health characteristics,

Contraceptive use before last pregnancy #Women's autonomy

index Pregnancy type # Frequency of ANC follow up for index pregnancy

Place of delivery of index child #ANC follow-up of index pregnancy

#Knowledge of contraceptive methods

Individual preference; -

#Sex preference #Age at entry into marriage

#Perception of large family siz

3.5. Data collection techniques

Data collection was carried out through house-to-house visits using face-to-face interviews. A team of six diploma qualified midwives conducted the interviews under the supervision of three midwives with bachelor degrees. Prior to the field work the data collectors and supervisor's underwent comprehensive two-day training to ensure consistency and reliability.

The questionnaire used for this study was carefully developed after an in-depth review of relevant literature (17, 20, 24, 37, 40) and was pre-tested before actual work. It included sections covering sociodemographic, cultural, history of maternal health and economic trait, knowledge of contraceptive options, and indicators of maternal high-risk fertility behavior. In addition, data on household asset ownership was gathered to calculate a wealth index. Each item owned was assigned a score of "1", while non-ownership received a score of "0", and principal component analysis (PCA) was done to classified the wealth index status of women. To evaluate participants' knowledge regarding contraceptive methods, eight yes/no questions were included. Each correct answer was given a score of "1" and each negative answer a "0".

3.6. Data quality management

A pre-test was employed before the main data collection phase to evaluate the clarity and functionality of the questionnaire. 15 mother participants who were made up about 5% of the population at unselected kebele for data collection was given a pretest, there was nothing need to any modification.

To maintain data quality, both the supervisor and the investigator reviewed the collected data for completeness, accuracy, clarity, and consistency before proceeding with data entry and analysis. For language consistency, the questionnaire originally developed in English was translated into Amharic and then back translated to English to ensure that the intended meaning of each question was preserved.

3.7 Analysis and data processing

Data was coded, entered, on Epi data version 4.6 statistical software and. HRFB was coded as "0" for non-HRFB and "1" for any HRFB. then was exported to SPSS Windows version 25 for analysis and to determine the relationship between each independent variable and the dependent variable, a bivariable logistic regression analysis was conducted and for confounding variables, multivariable logistic regression analysis model was used, variable with p-values less than 0.25 from the bivariate logistic regression analysis and a p-value of less than 0.05 in the multivariable logistic regression model was considered to be significantly associated with HRFB and adjusted odds ratios with their 95% confidence intervals (CI) was calculated, charts, tables, and figures used to summarize and present the data .

4 RESULTS

4.1.0 Socio-demographic respondents characteristics

Total of 297 women participated in the final analysis, achieving a response rate of 99%. The average age of the participants was 33.6 years, ranging from 19 to 49 years. More than half of the women, 153 (51.55%), were between 24 and 35 years old, while 128 (43.1%) fell within the 35 to 49 age group. The majority, 265 (89.2%), were married. Regarding occupation, 139 (46.8%) were homemakers, and 105 (35.4%) had basic literacy skills. In terms of economic status, the wealth index was evenly distributed: 98 (33%) were in the low-income category, 100 (33.7%) in the middle, and 99 (33.3%) in the high-income group. Most of the participants, 240 (80.8%), had access to media, and 153 (51.5%) reported using contraceptives.

Table 2: Socio-demographic characteristics of wolkite town, Gurage zone 2024.

Variable	Variable categories	Frequency	Percent
Respondents age in years	15 to24	16	5.4
	25 up to 34	153	51.5
	35 to 49	128	43.1
Marital status	single	7	2.4
	widowed	10	3.4
	divorced	15	5.1
	married	265	89.2
Husband occupation	farmer	58	19.5
	Merchant	74	24.9
	daily laborer	47	15.8
	driver	27	9.1
	Civil Servite	41	13.8
	Other*	50	16.8
Maternal education	Illiterate	30	10.1
	Read/write	105	35.4
	Elementary	85	28.6
	Secondary	40	13.5
	Tertiary	37	12.5
Husband's education	illiterate	36	12.1
	Can read and write	65	21.9
	Elementary (1-8)	104	35.0
	Secondary (9-12)	48	16.2
	Tertiary	44	14.8
Media exposure	Yes	240	80.8
	No	57	19.2
*other include students, craftsmen, private sector workers, unemployed and security guard.			

4.1.1 Reproductive characteristics respondents

From mothers who participated, 90 (30.3 %) of women had three children; antenatal care visit for their recent child, were 275(92.6%) and for 277(93.3%) women, place for their last delivery was medical facility, Planned and wanted pregnancies accounted for 214(72.15), of last pregnancies. The number number of unplanned pregnancies was 64(21.5%), and 19(6.4%) women had unplanned and unwanted pregnancy. A total of 135(45.5%) were nonautonomous. Among respondents', 153(51%), was used contraception before their last child. The number of ANC contact > than 4 times was 216 (78.5%) and the remain 59 (21.5%) women had less than 4 antenatal contacts.

4.1.2 Knowledge of contraceptive of respondents

The study found that 226 (76.1%) women answered four or more contraceptive method questions correctly. This indicating that the good level of knowledge about family planning among respondents. However, 71 (23.9%) mothers scored less than 4 correct answers, indicating that they had very limited knowledge about contraceptive method. overall 76.1% of respondent mothers demonstrated good knowledge of contraceptive method based on 8 questions about different methods, including contraceptive interrupt, intra uterine contraceptive device, emergency pills, implant, calendar method, , oral contraceptive,. and injectable,

4.1.3 HRFB respondents

This study's finding shows that 220 (74.1%) at CI of 95% of women had high-risk fertility behavior, of which 132(60%) were categorized in the single risk behavior, while 88 (40%) of women were in multiple high-risk groups. There were 93 (31.3%) respondent mothers over the age 34 who experienced the outcome. Out of the total HRFB, 92 (31.0%) involved a high birth order, 143(52.6%) cases had a short birth interval and 6(2%) births occurred in mothers below the age of 18 in wolkite town,

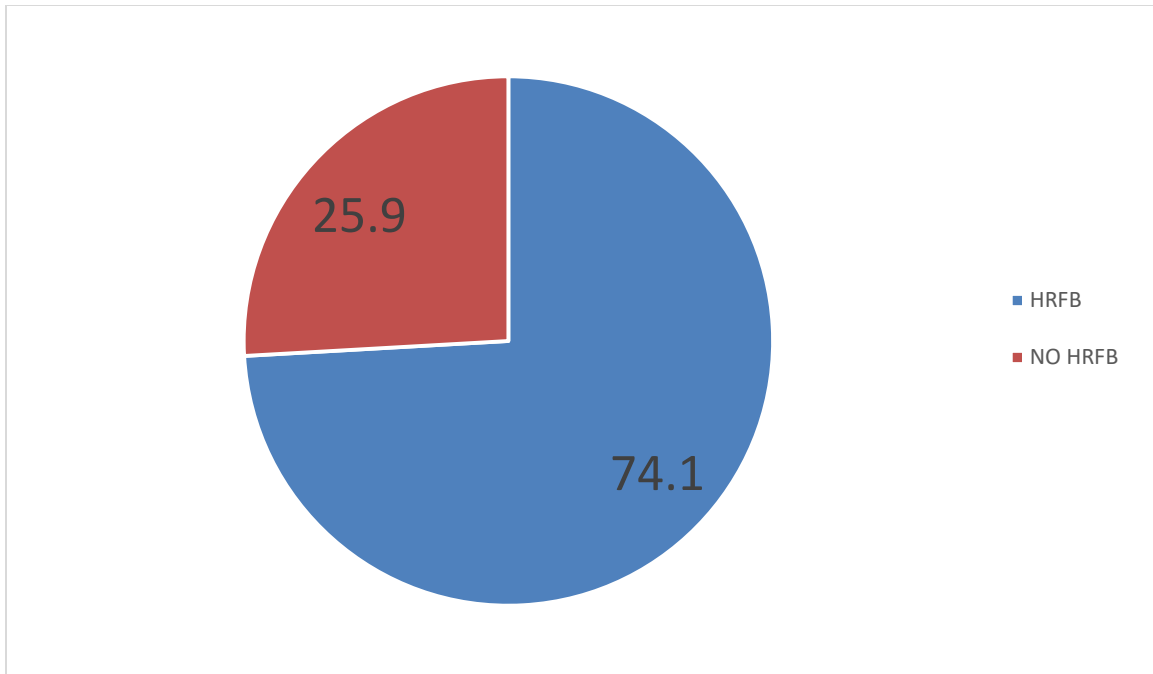


Figure 3 :The prevalence of HRFB among reproductive age group women at wolkite town, Gurage zone, central Ethiopia 2024

4.2 Factors associated with high-risk fertility behavior

Bivariate analysis was conducted using crude odd ratio and all associated factors with a P-value < 0.25 were moved to multivariate logistic regression to select factors linked with HRFB.

The following variables were significant in bivariate analysis; marital status, media exposure, wealth index, place for delivery, Autonomy, knowledge about contraceptive and believing in over three children is make life happy and sign of prosperity, blessing are associated with HRFB.

Table 3 : **the result of the multivariable report.**

HRFB	Odds ratio	Std. err.	z	P> z	[95% conf. interval]	
Q102MARI						
SINGLE	.0732915	.0696544	-2.75	0.006	.0113787	.4720785
DIVORCED	1.599789	1.128687	0.67	0.505	.4013482	6.376821
WINDOWED	.8369575	.7124398	-0.21	0.834	.1578115	4.438826
Q108MEDI						
no	2.178887	.8770455	1.93	0.053	.9899405	4.795792
wealthindex						
low	1.041143	.3817467	0.11	0.912	.5074669	2.136058
middium	.6796405	.2355354	-1.11	0.265	.3445782	1.340512
Q202DELI						
home	.5301677	.2943301	-1.14	0.253	.1785899	1.573873
DMAKING						
Nonautonomous	2.473682	.7649773	2.93	0.003	1.349313	4.534975
knowlege						
poor knwlege	2.428018	.95296	2.26	0.024	1.125041	5.240051
Q503CHIL						
YES	2.165252	.6208153	2.69	0.007	1.234396	3.798068
_cons	1.231954	.4095681	0.63	0.530	.6421096	2.363632

Table 3 : Factors associated with high risk fertility behavior of wolkite town, Gurage zone central Ethiopia

Variables	category of variable	HRFB		COR 95% CI	AOR 95% CI	p-value
		yes	no			
Marital status	Single	2	5	.135[.026-.714]	0.732(.01137-0.472)	.006
	Widowed	8	2	1.354[.280-6.532]	.836(.157-4.438)	0.834
	Divorced	12	3	1.354[.371-4.942]	1.59(.401-6.376)	0.505
	Married	198	67	REF		
Media exposure	No	46	11	1.586[.775-3.249]	2.17[.989-4.795]	0.053
	Yes	174	66	Ref	Ref	
Wealth index	Low	76	22	.987(.505,1.930)	1.041[.507-2.13]	.912
	Medium	67	33	.580(.309_1.090]	,679[.344-.1.340]	.265
	High	77	22	Ref	Ref	
Place of delivery	Home	8	12	2.010[.789-5.120]	.530[.178-1.573]	.253
	Health facility	69	208	Ref	Ref	
Autonomy	Non-autonomous	109	26	1.926[1.121-3.309]	2.47[1.349-4.53]	.003
	autonomous	111	51	Ref	ref	
Knowledge of	Poor knowledge	60	11	2.250[1.113-4.549]	2.42[1.125-5.24]	.024

contraceptive	Good	160	66	Ref	ref	
belief on having a large family	Yes	133	32	2.150[1268-3.644]	2.16[1.23-3.798]	.007
	No	87	45	Ref	ref	

4.3 DISCUSSION

The study objective was to examine maternal HRFB and associated factors among reproductive age mothers at Wolkite town, Gurage zone, central Ethiopia 2024 and analyzes its associated factors in the community of wolkite. This study showed 74.1%, (CI:68.3-79.7) of women exhibited HRFB. The results were in line with those a multi-level analysis study by using EDHS survey data, the prevalence was 76% [48] and, this study done in Bangladesh study it was reported that 67.7% of women experienced HRFB (37). However this prevalence is lower than Afar region, the maternal high risk fertility behaviour was 86.3% (36) and this study's results were increases when compare with study done at Addis Ababa (64%) [48]. This may because of the different in economic status and unmet need for family planning, and health service access and infrastructure, behavioral, communities cultural factor increased desire for children, and data collection methods.

Marital status plays significant role in shaping birth behavior. According to this study, being single was significantly associated with the HRFB. Indicating that single women are approximately 27% less inclined to take part in HRFB than their married counterparts. This study is aligning with result from a study analyzing data from the EDHS [31]. Furthermore, it has been reported that 77% women with married marital status in Ethiopia have HRFB [45]. This high risk among Married woman may attributed to factor such as short birth interval, high parity. Early marriage often leads to early childbearing result in increased engagement in HRFB. However, contrasting evidence from a study by Johns Hopkins University on American women found that a significant proportion (74%) of single mothers between the age of reproductive were single had HRF. It highlighted that single women in that context

often face instability, leading to HRFB [48]. This discrepancy may explain by socio economic, socio demographic and cultural variation between countries. In the context of wolkite town, several factor may contribute to the protective association between being single and HRFB; single women may be more likely to postpone childbirth, maintain long birth interval and have fewer child. Additionally, they may face less control over regarding reproductive decision, including family planning and spacing of birth.

An additional result of this study highlights that women who perceive a belief on a greater number of children as source of happiness, wealth, sign of bless are significantly participate in HRFB, specifically this woman were found to be 2.16 times as prone to engage such behavior (AOR =2.16, CI:1.23-3.798). Traditional norms and cultural strongly influence high risk fertility behavior, particularly while birth. In many communities, a large family is regarded as a symbol of property, social status and divine blessing, consequently, social pressure compels Women to bear multiple children, often disregarding the health risk involved. Additionally, these women with such beliefs may be less likely to use modern contraceptive method and seeking medical help during pregnancy or child birth stigmatized, as it may be perceived as sign of weakness or inability to handle the challenges of childbirth, such belief discourages women women from utilizing essential maternal healthcare service or adopting modern contraceptive method. Furthermore, there is a strong societal view where events like childbirth are seen as predetermined, which can increase the engagement of HRFB including high parity, giving birth at late age, and short birth interval. (1, 37).

According to this study, women who were non-autonomous (AOR=2.47, CI:1.349-4.53) had 2.47 times higher likelihood of experiencing HRFB when compared with who were autonomous.

This finding of the relationship between maternal autonomy and HRFB is in close agreement with the results of a study in Ghana. Women of fewer decision-making reported that women with higher probability of female functioning had more children than their colleagues and many children. Previous studies highlight that women with less chances absorb a little reproductivehealth services and lesser use of birth control, resulting in an increase in the size of HRFBs with high parity and low birth scores [46, 47]. However, the findings leaned towards studies conducted with SSA to conclude that women with high decision-making

functions have a higher probability of several risk birth behavior than women with low decision-making [43] Non-autonomous women are at high risk of engaging in HRFB for several reason : they may not be able to decide when and how many children to have, often having low opportunity to make informed decision on reproductive health, may face pressure from husband and society to have more child and unsafe intercourse, often lack of freedom to travel(seek) reproductive health care independently. Therefore, non-autonomy limits a woman's ability to make critical decision about her reproductive health, increase her exposure to HRFB.

Women who were poor knowledgeable about contraceptive methods were more likely to engage in HRFB than women who were more knowledgeable. This idea strengthens by this study done at wolkite town [AOR= 2.42, CI:1.125-5.24], which found that poor knowledge of contraceptive method increases the occurrence of HRFB by 2.42 times. This result is consistent with findings from study in the Kenbata zone, Doyogena town and from a cross sectional study using EDHS data, which showed that women with knowledge of contraceptive method had reduced the risk of HRFB [20,41]. The association between poor knowledge of contraceptive method and a likelihood of HRFB can be explained by low or limited access to basic reproductive health information, inadequate health service, misinformation about contraceptive method like cause cancer, infertility, which leads to unplanned or closely spaced or unlimited child birth. Individuals with limited knowledge are also less likely to use contraceptive effectively or consistently, all of which are components of HRFB.

5 Strength and limitation of study

As a cross sectional study, it may be subjective to recall bias introduced during data collection. this bias may arise from respondents' mothers or respondent inability to provide all necessary data about themselves and their husband correctly. One of the strengths of this study is the inclusion of the cultural factor as new variable influencing HRFB and, while much of existing literature focuses primarily on socio economic, socio demographic factor and reproductive factor.

5.1 Conclusion

This study concludes that the prevalence of high-risk fertility behavior (HRFB) was high in wolkite town Gurage zone Central Ethiopia. Women who belief that having a large number of children signifies happiness wealth and divine blessing are more chance to exhibit in HRFB. Women who are non-autonomous have increased risk of high-risk fertility behavior when compared with woman with non-autonomous. Additionally, women with poor knowledge about contraceptive methods were more in occurrence of HRFB than those who were good knowledge. Single women were found to have a lower risk of engaging in HRFB compared to their married counterpart.

5.2 Recommendation

Health education and communication on behavioral change intervention, increase awareness of knowledge of family planning in addition to those Empowering as well improving decision making ability of women is highly recommended for government. Create awareness about HRFB and its associated factor by empathizing culturally sensitive education for women and reducing mechanism program for HRFB like family planning, limiting the number of children for health planner I recommended. Also, I recommended Further research to asses individual belief variable in detail for researchers.

5.5 Dissemination and Utilization of Results

The findings will be presented and submitted to Wolkite university Public Health College Also, the finding will be disseminated to Gurage zone health department and wolkite town health unit. Efforts will be made to present to scientific conferences and publication will be carried out accordingly.

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ANNEXES

Annex I: Information sheet

Annex II: Informed consent sheet

Dear Sir/ Madam Good morning/afternoon. My name is_____ and i am data collectors of wolkite university, public health college research team. The research team undertaking a research on titles of prevalence of high-risk fertility behavior and associated factors among mothers Wolkite a town, Gurage zone. The study result will be used to improve maternal health program and scaling up of this innovative strategy of reducing maternal and child mortality and morbidity.

You have been chosen for this interview through a random selection process, similar to drawing an item from a basket without seeing what's inside. While taking part in this study may cause minor inconvenience—mainly due to the time it takes (approximately 15–30 minutes this will not be too much to fill the questions while you are on free time and there is no risk in participating in this research.

Can proceed with the questions? Yes/No

Data Collection Questionnaire:

English version

Code

Part I: Socio Characteristics of the women

S no	Questionnaires	Response	Skip to
001	How many years old	_____	
002	your marital status	1 Single 2. divorced 3. widowed 4. married	
003	what is your occupation	1. Housewife 4. Civil Servant 2. Merchant 5. Daily Laborer 3. Maid 6. Other_____	

004	What is occupation of your husband	1 Farmer 4. Civil Servant 2 Merchant 5. Driver 3. Daily Laborer 6 Other _____	
005	your level of education.	1 Illiterate 3. Secondary 2 primary 4. Tertiary	
006	Your Husband's education level	1 Illiterate 3. Secondary 2 primary 4. Tertiary	
007	What is your religion?	1 Orthodox 3 Protestant 2 Muslim 4 Catholic 5 Others, specify _____	
008	you have media exposure	1 Yes 2 No	If no, go to Q111
009	If yes to Q1008, which media?	1 RADIO 3 Printable 2 TV 4 Social media	
010	Your total number of children?	_____	
011	Do you have a Television?	1 Yes 0 No	
012	Do you have bicycles?	1 Yes 0 No	
013	Do you have your own house?	1 Yes 0 No	
014	Do you have a pipe water?	1 Yes 0 No	
015	Do you have an improved toilet?	1 Yes 0 No	
016	Do you have beds?	1 Yes 0 No	
017	Do you have tables?	1 Yes 0 No	
018	Do you have chairs?	1 Yes 0 No	

019	Do you have a kitchen cabinet?	1 Yes 0 No	
020	Do you have a Telephone(non-mobile)?	1 Yes 0 No	
021	Do you have a Electricity?	1 Yes 0 No	
022	Do you have a Refrigerator?	1 Yes 0 No	
023	Do you have a Bank account?	1 Yes 0 No	
024	Do you have Electric mitad?	1 Yes 0 No	
025	Do you have a computer?	1 Yes 0 No	
026	Do you have Main floor material?	1 Yes 0 No	
027	Do you have a Car or Truck?	1 Yes 0 No	
028	Do you have a Bajaja?	1 Yes 0 No	

Part II: Reproductive health factors

S. No	QUESTIONS	• Responses	Skip to
029	What is your age at your marriage?		
030	DELIVERY PLACE?	1 home 2 Health facility	if it is home go to q 2003
031	If you birth were at medical facility, which facility?	1 health center 2 Hospital 3 Health post 4 Private clinics 5. Other	
032	Did you receive antenatal care in the last pregnancy?	1 Yes 0 No	If no, go to Q307

033	If you say yes to Q304, where	1 health center 2 Hospital 3 Health post 4 Private clinics 5. Other	
034	total no of contact of ANC	_____	
035	Is your last delivery >=4?	1 Yes 0 No	
036	Prior to your getting pregnant did you use any method to delay or avoid pregnancy? /Do you know the methods?	1 Yes 0 No	If no, go to Q310
037	If yes q208, what method?	1 IUCD 2 implants 3 injectable 4 oral contraception 5 condoms 6 calendar method 7 emergency contraceptives 8. Coitus interrupts	
038	Last pregnancy type	1 PLANNED 2 Unplanned	
039	Who in the household makes decisions regarding maternal health care?	1 Me 3 Both 2 husband 4 other	
040	Who makes decisions FOR large household purchases?	1 Me 3 Both 1. 2 husband 4 other	
041	Who makes decisions ABOUT visiting family and relatives?	1 Me 3 Both 2 husband 4 other	
042	Who makes decisions rABOUT child health care?	1 Me 3 Both 2 husband 4 other	

Part-III: Knowledge about family planning methods

043	Do you use/know IUCD?	1 Yes 0 No	
044	Do you use/know Implanon?	1 Yes 0 No	
045	Do you use/know injection?	1 Yes 0 No	
046	Do you use/know oral contraceptives?	1 Yes 0 No	
047	Do you use/know condom?	1 Yes 0 No	
048	Do you use/know calendar method?	1 Yes 0 No	
049	Do you use/know emergency contraceptive?	1 Yes 0 No	
050	Do you use/know Coitus interrupts?	1 Yes 0 No	

Part-IV: High risk fertility behavior:

051	age at your =Last BIRH?		
052	age at your first birth		
053	Inter Birth I space delivery from the preceding birth?	_____ months	
054	Number of the last child.		
055	Which sex of child is preferred for you	1 BOY 2 GIRL	
056	Best AGE to ENTRY INTO MARRIAGE	1) 13-18 yr 3) 24-29 2) 19-23 yr 4) >30	
057	Believing in >3 child is sign of prosperity and divine bless	1 Yes 0 No	

Thank you!!!