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Delayed time to pregnancy and associated factors among pregnant women attending antenatal care in bale zone administrative towns health facilities: multi-center cross-sectional study

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Abstract

Background The desire to conceive and become parents is a fundamental aspect of human life that carries immense personal, emotional, and societal significance. For many couples, achieving pregnancy represents a long-cherished dream, but the journey to parenthood is not always straightforward. The duration it takes to achieve the desired pregnancy can vary significantly among individuals and is influenced by many factors. This study explores the factors that influence the delayed time of pregnancy among women with naturally planned conception.

Methods An institutional-based cross-sectional study was conducted from May 1 to May 30, 2023, in public health facilities of Bale Zone administrative towns, Southeast Ethiopia. Using systematic random sampling, 388 women participated in the study and a pretested questionnaire was used to collect data. Bivariate logistic regression was done, and variables with p-values < 0.25 were exported to multivariable logistic regression, and a statistically significant association was declared at p-value < 0.05.

Results The study revealed delayed time to pregnancy was 18.6% with 95% (CI = 14.67–22.44%). Women's age ≥ 35 , (AOR = 2.61; 95% CI: 1.17–5.82), menstrual irregularity (AOR = 3.79; 95% CI: 1.98–7.25), and frequency of sexual intercourse/week (AOR = 2.15; 95% CI: 1.05–4.41) and women's sexual dysfunction before conception (AOR = 3.12, 95% CI: 1.62–6.01) were significantly associated factors with delayed time to pregnancy at p-value < 0.05.

Conclusion The study revealed a substantial proportion of delayed time to pregnancy. This delayed time to pregnancy was associated with older maternal age, irregular menstrual cycles, coital activity per week, and the women's sexual dysfunction before pregnancy. Consequently, addressing delayed time to pregnancy requires a targeted approach, prioritizing initiatives such as raising awareness, fostering increased frequency of sexual activity

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per week, exploring interventions for women with irregular menstrual patterns, and challenges related to sexual dysfunction.

Keywords Delayed time to pregnancy, Wait time to pregnancy, Sub fecundity, Bale zone

Background

Every person experiences childbearing at some point in their lives, and it is closely related to the ultimate goals of completion, satisfaction, and family integration [1]. Individuals and couples must decide how many children to have when to have them, and at what ages. Infertility may compromise the fulfilment of these fundamental human rights [2].

Delayed time to pregnancy is clinically defined as 12 months of unprotected sexual activity throughout the fertile part of the menstrual cycle without a successful pregnancy [3]. A higher waiting time to pregnancy (WTTP) indicates a lower fertility rate [4]. The length of time that reproductive-age women wait before becoming pregnant varies and is a reflection of fecundability [5]. When using a natural approach to conception, getting pregnant may take months or even years [6, 7]. Furthermore, if the time to conceive exceeds 12 months of WTTP, the International Committee for Monitoring Assisted Reproductive Technology (ICMART) classifies failure to achieve pregnancy after exposure to unprotected sexual intercourse as a reproductive health problem [8].

For couples, delayed longer time for pregnancy is a common health issue [9], and couples may experience STIs, divorce, separation, helplessness, psychological suffering, social stigmatization, and worry [10]. Even though some women may become pregnant after a long period of trying, this might hurt the outcome of the pregnancy [11].

During their reproductive lives, 10–15% of couples experience difficulties conceiving the desired number of children and seek specialized fertility therapy [12]. Between 2009 and 2015, more than 60 to 80 million people worldwide were unable to have the kid they wanted [13]. According to studies conducted in European nations, the percentage of women who wait longer than 12 months to become pregnant ranges from 10.4 to 17.58% [14, 15]. In middle-income countries, sub-fertility was reported to be 31.1% [15]. Furthermore, according to South African research, 22% of women waited more than 12 months to conceive [16]. Moreover in Ethiopia, studies revealed that delayed time to pregnancy ranges from 17.8–18.3% [7, 17].

Evidence indicates that various factors are connected to delayed time to pregnancy. According to a study done in European countries, those who consume a lot of caffeine (more than five cups of coffee per day or its equivalent; 500 mg) are linked to lower fecundity (delayed time to pregnancy) [18]. Similarly to this, smoking has a

significant negative impact on fertility [19]. Additionally, delayed time to pregnancy is linked to the age of couples [20, 21], abortion, menses irregularity, and usage of contraceptive techniques and coital frequency [22]. It is also linked to recreational activities such as consuming alcohol, smoking cigarettes, and chewing khat [7, 23].

While the identification of delayed time to pregnancy and its associated factors is pivotal for the prevention, treatment, and counselling of reproductive-age women facing delayed time to pregnancy in any context, there is a limitation of information in Ethiopia [24]. Information on delayed time to pregnancy helps couples and health-care providers make proactive decisions about addressing its preventable causes. Additionally, it has the potential to minimize waiting periods for pregnancies and lower treatment costs for couples.

Therefore, this study aimed to assess the magnitude of delayed time to pregnancy and associated factors among pregnant women attending antenatal care at Bale zone administrative towns health facilities.

Methods

Study area and period

The study was conducted in Bale zone administrative towns, in southeast Ethiopia from May 1, 2023, to May 30, 2023. The Zone has two administration towns (Robe and Goba) and is located 430–446 km from Addis Ababa, the capital city of Ethiopia. As data from Goba town and Robe Town Health Bureau shows, Robe Town has a total population of 85,845, 26,618 households, 18,971 reproductive-age women, two health centers (Baha Biftu and walta'i) and one General Hospital (Robe General Hospital) and while Goba town has a total population of 55,228 in two kebeles, among this, (27,935 are men and 27,293 women), 11,506 households and 12,221 reproductive-age women. The town has 2 health centers (Harawa Sinja and Goba Health Center) and one General Hospital (Goba General Hospital).

Study populations

Source population

All pregnant women attending ANC services with natural planned conception at Bale zone administrative towns public health facilities.

Study populations

All systematically selected pregnant women with natural, planned conception during the data collection period.

Inclusion and exclusion criteria

All pregnant women with natural, planned conception and attending ANC services at Bale zone administrative towns health facilities during the study period were included.

However, those who had used contraceptives within six months before pregnancy were excluded, as contraceptive use can commonly affect their physiological ability to conceive within the expected time frame.

Sample size calculations

The Sample size was calculated using a single population formula, assuming that the proportion of sub-fecundity is 18.3% which is taken from a study conducted in Addis Ababa [7].

$$n = \frac{Z^{2*} (pq)}{d^2} = \frac{(1.96)^{2*} (0.183 * 0.817)}{(0.04)^2} = 359$$

Where n, is the required sample size.

Z, the critical value for a 95% confidence interval.

p, Proportion of sub-fertility or wait time to pregnancy (>12 months)=0.183.

d, margin of error (4%).

By adding 10% of the nonresponse rate the final sample size was 395.

Sampling procedure

The predetermined sample size (395) was selected using a systematic random sampling technique. Before choosing the study participants, sample sizes were allocated proportionally to the number of expectant women (depending on previous monthly patient flow) in each health facility. Finally, using the systematic sampling technique, a sample size of ($n=395$) target women was chosen using an interval ($k=4$) calculated from the monthly flow of pregnant women divided by the number of samples allocated to each health facility (Fig. 1).

Data collection tool and technique

Data were collected using structured questionnaires which were developed after reviewing different literature [7, 17]. Pregnant women who had unprotected sex before the current pregnancy, were not using any form of contraception, intended to become pregnant, and had made plans with a partner by a schedule before conception were distinguished as having planned or unplanned pregnancies before data collection. Eight female BSc Midwifery health professionals and two supervisors participated in collecting data.

Data processing and analysis

After the data was collected through an open data kit (ODK), the data was downloaded as an Excel file and exported to SPSS version 26, and checked for

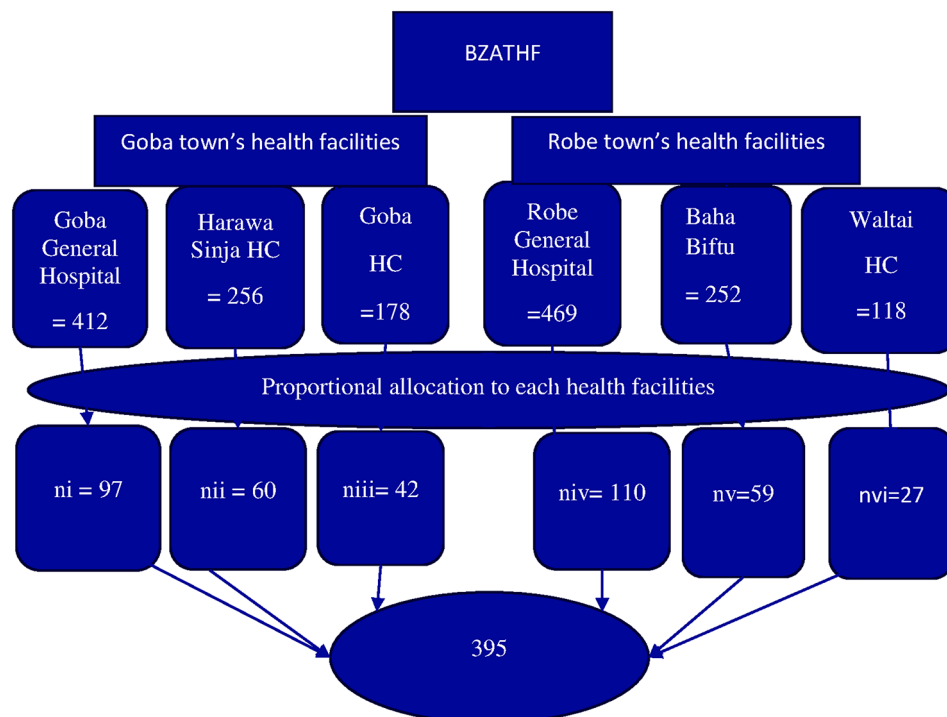


Fig. 1 Schematic presentation of sampling procedure to assess delayed time to pregnancy and associated factors among pregnant women in BZATHF, Southeast Ethiopia, 2023. BZATHF: Bale Zone Administrative Towns Health Facilities, HC: Health Centers

completeness, cleaned, and coded. Descriptive statistics were performed to describe the study participant's characteristics. Multi-collinearity was checked by using the variance inflation factor (VIF) to determine if there was a correlation between two or more independent variables and it was tolerated when $VIF < 5$. The model goodness of fit was tested by Hosmer and Lemeshow and it was found 0.47. Both Bivariable and multi-variable logistic analyses were used to assess the association between each independent variable with the outcome variable.

All variables with a p -value < 0.25 at 95% CI in the binary logistic regression model at bivariate logistic regression were transformed into the final multivariable logistic analysis to control all potential confounding variables. Odds Ratio (OR) with 95% CI was estimated to measure the strength of association factors affecting fecundity. In this study, a variable with a p -value of < 0.05 was considered statistically significant. Finally, data was organized and presented using text, tables, and figures.

Operational definitions and measurements

Fertility

"It refers to the actual production of live birth, output, or production of reproduction rather than the ability to have children. Scholars defined fertility as the reference of live birth, not stillbirth or abortion" [25, 26].

Fecundity

Fecundity is a physiological (biological) ability to reproduce which is the period between menarche and menopause in women [26].

Waiting time to pregnancy

Waiting time to pregnancy was estimated by subtracting months of sexual abstinence brought on by illness, a partner moving away from each other for work, or other reasons from the beginning of unprotected sexual activity to the last menstrual cycle. Based on the question that inquired how many months or years it took a woman to become pregnant, the waiting period for pregnancy was evaluated. How long did you engage in sexual activity before taking any steps to prevent getting pregnant? The waiting period before becoming pregnant was employed in this study to determine the fecundity status of mothers who had naturally intended pregnancies. Waiting time to pregnancy was classified as dichotomies, sub-fecundity (delayed time greater than 12 months of waiting time to pregnancy) and fecundity (waiting time to pregnancy for 12 and below months) [7, 17].

Natural conception

Natural conception pregnancy without Assisted Reproductive Technology (ART), biological or physiological process.

Planned pregnancy

Suggest that if the mother has the intention to conceive, discontinues contraception, gains agreement from her partner, and actively seeks to become pregnant within the preferred timeframe [27].

Female sexual function index (FSFI)

FSFI was scored by summing the scores for each item in the desire, arousal, lubrication, orgasm, and satisfaction domains. The total FSFI score is the sum of domain scores. The maximum possible total score is 36. A total score below 26 may indicate the presence of female sexual dysfunction [28].

Data quality control

Attempts were made for questions to suit the local setting. The questions were initially written in the English language and then translated into the Afan Oromo language by another person and re-translated back by other translators to English to compare their consistency. A structured Afan Oromo version questionnaire was used after pre-testing on 10% of the same source population other than the sampled population (Dodola General Hospital). Amendments were made after pretesting. Data collectors were trained on the study instrument and data collection procedure.

After data collection, data was exported to SPSS version 26 and frequencies were used to check for missing values and outliers. The data were ensured using a prepared tool in English, translated into Afan Oromo, and subsequently translated back to English to ensure consistency and accurate reporting of findings. Before commencing the actual data collection, the data quality was assured through the pretesting of questionnaires on 10% (39 study participants) of the sample size at Dodola General Hospital. Data collectors and supervisors received training on the study purpose, methodology, conducting interviews, obtaining consent, maintaining confidentiality, and respecting participants' rights before data collection. Throughout the data collection process, supervisors provided oversight, and there was regular phone contact between the principal investigator and supervisors to discuss and address any issues that arose during data collection. The collected data were reviewed by supervisors to ensure completeness.

Ethical considerations

Ethical approval was obtained from Mada Walabu University, Research, and Technology Transfer Coordinating Office with reference number (RTTCO/123/2023). Written informed consent was obtained from each study participant, and each study participant was informed about the objective of the study and the confidentiality of the information she was giving. Moreover, the confidentiality

Table 1 Socio-demographic characteristics of pregnant women who attended ANC services at Bale Zone Administrative Towns Health facilities (BZATHF), 2023. (n = 388)

Variables	Categories	Frequency	%
Woman's age	19–24	117	30.2
	25–29	85	21.9
	30–34	68	17.5
	≥ 35	118	30.4
Husband's age	19–24	41	10.6
	25–29	115	29.6
	30–34	102	26.3
	≥ 35	130	33.5
Women's occupation	Housewife	139	35.9
	Merchant	84	21.6
	Farmer	37	9.5
	Gov't employee	94	24.2
Women's working hours per week	Housewife *	139	35.8
	20–40	152	39.2
Partner's occupation	41–60	97	25
	Farmer	39	10.1
	Merchant	85	21.9
	Gov't employee	68	17.6
Partner's working hour average per week before the pregnancy (hours)	Daily labourer	149	38.4
	Others*	47	12.1
	Farmers*	39	10.1
	≤ 40	272	70.1
Women's Educational status	41–60	76	19.8
	No formal education*	72	18.6
	Primary	96	24.7
	Secondary	142	36.6
Duration of living together (in months)	Tertiary (College)	78	20.1
	< 60	217	55.9
	61–120	122	31.4
Average monthly family income	> 120	49	12.6
	< 2000	67	17.3
	2001–4000	85	21.9
	4001–6000	101	26.0
	> 6000	135	34.8

Others*: Student, Daily workers, **Housewife *:** difficult to calculate working hours, **Farmers*:** difficult to calculate working hours, **No formal Education*:** those had not completed academic programs, such as school or college, and instead have pursued other learning experiences (through religious), and those can read, write and sign

of information was guaranteed by using code numbers rather than personal identifiers and by keeping the data locked.

Results

Socio-demographic characteristics

In this study, three hundred eighty-eight women were involved, making a response rate of 98.2%. The mean and standard deviation (SD) age of the respondents before the current pregnancy was 29 years (SD±6.835), and 353(91%) were married. One hundred thirty-nine (35.9%)

Table 2 Reproductive-related factors of pregnant women who attended ANC services at BZATHF, 2023. (n = 388)

Variables	Frequency	%	
Gravidity	0	120	30.9
	≥ 1	268	69.1
Parity	0	128	33
	≥ 1	260	67
Abortion	Yes	31	8.0
	No	357	92.0
Contraceptive used six months before pregnancy	None	112	28.9
	Condom	18	4.6
	Pills	50	12.9
	Injection	124	32.0
Coital Frequency before pregnancy/week	Implants	63	16.2
	IUCD	21	5.4
	1	133	34.3
Women's sexual dysfunction	2–3	119	30.7
	≥ 4	136	35.1
	No	274	70.6
	Yes	114	29.4

IUCD: Intra Uterine Contraceptive Device

of study participants were housewives. Participants working more than 40 h per week before the current pregnancy were 97(25%). The average monthly income of families before the current pregnancy > 6000 ETB was 135(34.8%) (Table 1).

Reproductive related factors

Among participants, more than two-thirds 268(69.1%) are multigravida, and 31 (8%) had a history of abortion. Participants who practiced coital frequency one time per week before pregnancy were 133(34.3%). Regarding contraceptive utilization almost one-third 124(32%) have used injection type followed by implants 63(16.2). One hundred thirty-six (35.1%) of study participants had practiced sexual intercourse, four and above times per week (Table 2).

Substance use-related factors

Among participants, 155(29.6%) drank coffee greater than four cups per day and the majority of participants 189(48.7%) husbands were consuming coffee one to three cups per day before pregnancy. Seventy-four (19.1%) of participants had consumed alcohol. Among respondents 40 (10.3%) of the women and 115 (29.6%) spouses chewed khat (Table 3).

Medical illness-related factors

Before the present pregnancy, 357 (92%) of participants were aware of their HIV status. Out of them, 355 (91.5%) were negative and only 2 (0.5%) were positive. Of these, 31(8.6%), were unaware of their status before conception. In terms of health issues, 2(0.5%) of the participants and 1(0.3%) of partners, had diabetes mellitus (DM) (Table 4).

Table 3 Substance use-related factors of pregnant women who attended Ante Natal Care (ANC) services at BZATHF, 2023. (n = 388)

Variables	Categories	Frequency	%
Women's coffee drinking (cups/day)	None	118	30.4
	1–3	155	39.9
	≥4	115	29.6
Husbands' coffee drinking(cups/day)	None	146	37.6
	1–3	189	48.7
	≥4	53	13.7
Women's alcohol drinking	Yes	74	19.1
	No	314	80.9
Partner's alcohol drinking	Yes	115	29.6
	No	273	70.4
Women's khat chewing	Yes	40	10.3
	No	348	89.7
Partner's khat chewing	Yes	71	18.3
	No	317	81.7
Women's cigarette smoking	Yes	3	0.8
	No	385	99.2
Partner's smoking	Yes	81	20.9
	No	307	79.1

Table 4 Medical illness-related factors of pregnant women who attended ANC services at BZATHF, 2023. (n = 388)

Variables	Categories	Frequency	%
Women's HIV status	Non-reactive	355	91.5
	Reactive	2	0.5
	Unknown	31	8.0
Husband's HIV status	Non-reactive	330	85.1
	Reactive	1	0.3
	Unknown	57	14.7
Women's medical illness	None	354	91.2
	DM	2	0.5
	Unknown	32	8.3
Husband's medical illness	None	365	94.1
	DM	1	0.3
	Unknown	14	3.6

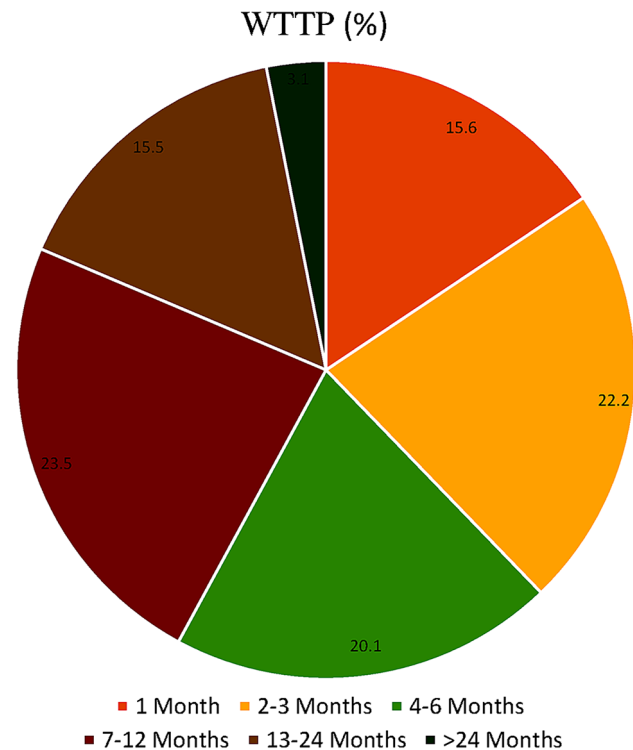
DM: Diabetes Mellitus, HIV: Human Immunodeficiency Virus

Waiting time for pregnancy

The study identified that delayed time to pregnancy was 18.6% (95% CI=14.67-22.44%) with the median amount of time spent waiting to become pregnant was five months. Waiting time to pregnancy in the first month was 15.6%, WTTP within six months was 57.9%, within twelve months was 81.4%, and after twelve months was 18.6% (Fig. 2).

Factors associated with delayed time to pregnancy

Bi-variable logistic regression analysis was carried out and found that the age of women before pregnancy, women's coffee drinking (cups/day), menses regularity, partners' age, partner's coffee drinking(cups/day), partner's cigarette smoking, coital frequency(days/week),

**Fig. 2** Waiting time to pregnancy of pregnant women attended ANC services at BZATHF, 2023

and women sexual dysfunction were associated with delayed time to pregnancy. Variables found to be significantly associated with delayed time to pregnancy during bi-variate logistic regression analysis were taken to multivariable logistic regression analysis to adjust for confounding and found that age of women before pregnancy, menses irregularity, coital frequency, and women's sexual dysfunction before pregnancy were significantly associated with delayed time to pregnancy.

Participants who were ≥ 35 years old had 2.61 times higher odds of delayed time to pregnancy compared to those younger ages.

Furthermore, those respondents who had irregular menstrual cycles had 3.53 times higher odds of delayed time to pregnancy compared to their counterparts. Moreover, participants who practiced coital frequency < 2 per week had 2.47 times higher odds of delayed time to pregnancy compared to those who had practiced > 3 times per week before pregnancy. women who had sexual dysfunction had more than 3 times the odds of delayed time to pregnancy compared with no sexual dysfunction (Table 5).

Discussion

This study assessed the magnitude of delayed time for pregnancy and its associated factors among pregnant women attending ANC services in Bale zone

Table 5 Factors associated with delayed time to pregnancy of pregnant women attending ANC services at BZATHFs, 2023. (n = 388)

Variables	Categories	Sub-fecundity		COR (95% CI)	P value	AOR (95% CI)	P values
		No	Yes				
Woman's age in years	15–24	100	17			1	
	25–29	80	5	0.37 (0.13–1.04)	0.059	0.52 (0.165 – 1.66)	0.272
	30–34	60	8	0.78 (0.32–1.93)		0.97 (0.33–2.87)	0.955
	≥ 35	76	42	3.25 (1.72–6.15)	0.000	2.61 (1.17–5.82)	0.019*
Women's coffee intake (cups/day)	None	136	19			1	
	1–3	101	14	0.99 (0.47–2.07)	0.983	0.71 (0.30–1.68)	0.432
	≥ 4	79	39	3.53 (1.91–6.53)	0.000	1.84 (0.85–3.98)	0.120
Menses regularity	Regular	263	39				
	Irregular	53	33	4.20 (2.42–7.27)	0.000	3.53 (1.83–6.82)	0.000*
Partners' age	15–24	34	7			1	
	25–29	101	14	0.67 (0.25–1.81)	0.432	0.69 (0.21–2.28)	0.548
	30–34	89	13	0.71 (0.26–1.93)	0.501	0.67 (0.20–2.27)	0.522
	≥ 35	92	38	2.01 (0.82–4.92)	0.128	1.72 (0.54–5.56)	0.362
Partners' coffee intake	None	125	21			1	
	1–3	155	34	1.31 (0.72–2.36)	0.378	1.00 (0.49–2.04)	0.997
	≥ 4	36	17	2.81 (1.34–5.89)	0.006	1.79 (0.68–4.72)	0.236
Partner's cigarette smoking	No	260	47				
	Yes	56	25	2.47 (1.40–4.34)	0.002	1.15 (0.56–2.36)	0.706
Coital frequency(days/week)	>3	115	18			1	
	2–3	104	15	0.92 (0.44–1.92)	0.827	0.62 (0.26 – 1.50)	0.289
	1	97	39	2.57 (1.38–4.78)	0.003	2.47 (1.18–5.16)	0.016*
Women's sexual dysfunction	No	241	33			1	
	Yes	75	39	3.80 (2.23–6.46)	0.000	3.12 (1.62–6.01)	0.001*

*Significant at p-value < 0.05, 1: set as reference group, WTTP: Waiting Time to Pregnancy, COR: Crude Odds Ratio, AOR: Adjusted Odds Ratio, CI: Confidence Interval

administrative towns' health facilities. The finding showed that 18.6% with 95% (CI=14.67–22.44%) of respondents had delayed time to pregnancy. Women's age before pregnancy, menses irregularity, coital frequency before pregnancy, and women's sexual dysfunction were factors that contributed to delayed time to pregnancy. The finding of this study, is in line with a study conducted in Arba Minch (17.8%), Addis Ababa (18.3%), and European nations (16.1%) [7, 17, 29].

However, the finding of this study was higher than the study conducted in Palestine (13.4%), and German (10.4%) [30, 31]. The observed discrepancy in findings may be attributed to variations in the study populations. Notably, 83% of participants in the Palestine village study were within the 24-year age range, a demographic contrasted by our study where only 30.2% fell into the same category. Beyond age differences, lifestyle variances among the study populations could be influencing the disparate percentages of sub-fecundity outcomes. This underscores the importance of considering demographic and lifestyle factors when interpreting and comparing study results.

The finding of our study is lower than the study conducted in South Africa (22%). This disagreement can be due to the inclusion of all pregnant mothers in these studies, unlike this study.

participants who aged ≥ 35 years had higher odds of delayed time to pregnancy compared to their counterparts. This finding is consistent with earlier research from Dutch, Addis Ababa, and Arba Minch [7, 17, 31] which suggested that as age increased, the likelihood of delayed time to pregnancy was more likely than at younger ages. In actuality, women's fecundity status decreases during their lives due to the influence of the biologically inevitable process of aging [32]. As women get older, the number and quality of eggs in the ovaries decrease [33] and as a result, there is a higher likelihood of encountering difficulties in conceiving. Older women may experience diminished egg quality, reduced ovulation frequency, and an increased risk of chromosomal abnormalities, which can affect the chances of successful conception [34].

Moreover, those respondents who had a coital frequency of one time per week had higher odds of having delayed time to pregnancy compared to their counterparts. This finding is in agreement with a study done in the USA [35]. The possible justification may be due to increased chances of timing intercourse with ovulation and having more frequent sexual intercourse throughout the week increases the likelihood of having intercourse during the woman's fertile window when ovulation is likely to occur. This improves the chances of sperm being present in the reproductive tract when the egg is released, increasing the chances of fertilization.

Furthermore, participants who had menstrual/menses irregularity had higher odds of delayed time to pregnancy. This finding is consistent with studies conducted in Arba Minch and Switzerland [17, 36]. A possible justification for consistency may be difficulty in predicting ovulation and irregular menstrual cycles often make it challenging to predict when ovulation will occur because, ovulation is the release of an egg from the ovary, and it is the most fertile period of the menstrual cycle and when cycles are irregular, it becomes harder to identify the fertile window, increasing the likelihood of missing the optimal timing for conception.

Moreover, an association was observed between having sexual dysfunction and delayed time to pregnancy. Delayed time to pregnancy was increased among mothers with sexual dysfunction compared to those who had no sexual dysfunction. This finding is supported by studies conducted in the UK, and Spain [37, 38] suggesting that sexual dysfunction can influence various aspects of the reproductive journey. The possible justification may be, firstly, that mothers with sexual dysfunction may experience decreased sexual desire, which can lead to a decrease in sexual activity and frequency of intercourse as regular intercourse is necessary for conception [39]. Secondly, sexual dysfunction can also affect the physiological response of the female body during intercourse, as women with arousal problems may have difficulty achieving adequate vaginal lubrication, which can make intercourse uncomfortable or painful [40].

Conclusion

The study revealed that a substantial proportion of delayed time to pregnancy. Furthermore, the study identified that the age of women at the attempt of pregnancy, menstrual/menses irregularity, frequency of sexual intercourse, and women's sexual dysfunction were significantly associated with delayed time to pregnancy. Developing a focused approach to address delayed time to pregnancy should involve planning a health education delivery method that advises couples to conceive at an early age, increase the frequency of coital days per week, and provide appropriate investigation and treatment for women who experience irregular menses and sexual dysfunction domain.

Limitations and strength

Due to the cross-sectional nature of the study, it does not identify a cause-and-effect relationship. It may be prone to recall bias and social desirability bias, leading to either over- or under-reporting depending on how they acted while reporting recent and past information. study did not consider the influence of male sexual dysfunction and hence further studies are recommended to investigate the independent effect on delayed time to pregnancy or

fecundability. This study assessed the influence of women's sexual dysfunction and it was found to be significantly associated with delayed time to pregnancy, while previous studies had not assessed it.

Abbreviations

ANC	Antenatal Care
AOR	Adjusted Odds Ratio
BZATHF	Bale Zone Administrative Towns Health Facilities
CI	Confidence Interval
DM	Diabetes Mellitus
WTTP	Waiting Time to Pregnancy

Acknowledgements

The authors express their gratitude to Madda Walabu University College of Medicine and Health Sciences for providing a collaboration letter, to the Bale Zone administrative towns health office, and MCH coordinator in each health facility for giving valuable information regarding the study area. In addition, the authors extend their sincere gratitude to the data collectors, supervisors, and study participants for being involved in the study.

Author contributions

All the authors have contributed equally from proposal development to final manuscript development. Sheleme Mengistu Teferi: Conceptualization; Data curation; Formal analysis; Investigation; Methodology; Project administration; Resources; Software; Supervision; Validation; Visualization; Writing – original draft; Writing – review & editing. Kenbon seyoum: Data curation; Formal analysis; Software; Supervision; Validation; Visualization; Writing – original draft; Writing – review & editing. Neway Ejigu: Formal analysis; Software; Supervision; Validation; Visualization; Writing – original draft; Writing – review & editing. Girma Geta - Data curation; Supervision; Validation; Visualization; Writing – original draft; Writing – review & editing. Lema Fikadu: Conceptualization, manuscript preparation, and editing. Solomon Seyife: Conceptualization, review and writing and editing.

Funding

The author(s) received no financial support for the research, authorship, and/or manuscript preparation.

Data availability

The data used for this study is available upon reasonable request from the corresponding author.

Declarations

Ethics approval

Ethical approval was obtained from Madda Walabu University, Research and Technology Transfer Coordinating Office with reference number (RTTCO/123/2023). Informed consent to participate was obtained from all of the participants.

Consent for publication

It is not applicable.

Competing interests

The authors declare no competing interests.

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Received: 4 December 2023 / Accepted: 19 July 2024

Published online: 12 August 2024

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