ADDIS ABABA UNIVERSITY

COLLEGE OF HEALTH SCIENCES

SCHOOL OF NURSING AND MIDWIFERY

DEPARTMENT OF MIDWIEFERY

ASSESSMENT OF KNOWLEDGE AND ATTITUDE TOWARDS ASSISTED REPRODUCTIVE TECHNOLOGY AMONG WOMEN ATTENDING INFERTILITY CLINIC, ADDIS ABABA, ETHIOPIA.

BY: - EMAN NASSIR (BSc)

A THESIS SUBMITTED TO ADDIS ABABA UNIVERSITY, COLLEGE OF HEALTH SCIENCES, SCHOOL OF NURSING AND MIDWIFERY IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE DEGREE OF MASTER OF SCIENCE IN MATERNITY AND REPRODUCTIVE HEALTH NURSING.

JUNE, 2025

ADDIS ABABA, ETHIOPIA

COLLEGE OF HEALTH SCIENCES

SCHOOL OF NURSING AND MIDWIFERY

MASTER OF SCIENCE THESIS SUBMISSION FORM

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Full title	**Assessment of knowledge and attitude towards assisted reproductive technology among women attending infertility clinic, Addis Ababa, Ethiopia.**
Study period	**Feb 30- April 15 , 2025**
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APPROVAL BY THE BOARD OF EXAMINATION

This thesis by Eman Nassir is accepted in its present form by the board of examiners as satisfying thesis requirement for the degree of masters in maternity and reproductive health.

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ACKNOWLEDGMENTS

First and foremost, I would like to thank God for everything he has done for me , then I would like to thank my research advisors, Mr Jembere Tesfaye, Mr Mesfin Abebe for their invaluable guidance, expertise, and unwavering support. Their insightful feedback, encouragement, and dedication were crucial in shaping the direction of this study. I am grateful to my colleagues and peers, for their constant support, helpful discussions, and suggestions, which significantly enhanced the quality of this research.

I also acknowledge Addis Ababa University College of Health Science, Department of Nursing and Midwifery, for giving me the opportunity to carry out this research. My heartfelt thanks go to the study subjects and supervisors for their participation.

ACRONYMS AND ABBREVIATIONS

ART: Assisted reproductive technology

EDHS: Ethiopian demographic survey

ICSI: Intra-Cytoplasmic Sperm Injection

IUI: Intra uterine semen injection

IVF: In vitro fertilization

SPHMMS : Saint Paul's Hospital Millennium Medical College

WHO: World Health Organization

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ABSTRACT

Background: Assisted reproductive technologies (ART) are effective fertility treatments involving eggs or embryos outside of a body. Despite their growing use and success, many women still lack adequate understanding of the treatment. Assessment of knowledge and attitude is significant in clearing the misconceptions and myths about assisted reproductive technology.

Objective: The main of object of the study is to assess knowledge and attitude towards assisted reproductive technology among women attending infertility clinic, Addis Ababa, Ethiopia, 2025.

Methods: An institutional cross-sectional study design was conducted among 408 infertile women attending an infertility clinic, selected using simple random sampling from February 30- April 30, 2025.A sampling frame was prepared using a daily list of eligible women. Data was collected through structured interviewer-administered questionnaire using the kobo Toolbox. The collected data were exported to an Excel spreadsheet and subsequently imported into SPSS version 25 for analysis. Variables with a p-value of < 0.25 in bivariate were a candidates for multivariate and those variables with a p-value of <0.05 in multivariate logistic regression were considered as a statistically significant factors for knowledge and attitude of ART.

Result: A total of 408 study participants with a response rate of 96.6% were included in this study. Among the participants 65.4% have inadequate knowledge and 62.3% of them exhibit unfavourable attitude. Participants younger than 34 years, less than 5 years duration of infertility, paternal educational level of college and above and favourable attitudes were positively associated with better knowledge of ART. In turn those with adequate knowledge and prior awareness about ART were significantly more likely to have favourable attitude towards ART.

Conclusion: A significant proportion of women attending infertility clinic had limited knowledge and unfavourable attitude towards ART. These findings highlight that the need for context-specific educational interventions and community involvement techniques to promote greater knowledge and acceptance of ART.

Key words: - Infertility, ART, IVF, Knowledge, Attitude, Infertile women.

1 INTRODUCTION

1.1 Background

Infertility is clinical defined as an inability to become pregnant after 12 months or more of regular, unprotected coitus(1). According to WHO infertility affects around 17.5% of the adult population, or roughly one in every six people worldwide(2). In Africa the prevalence ranges from 20%-35%(3) , whereas in Ethiopia its about 7.6%%(4).

Infertility can be Primary infertility which occurs when a couple has not been successful in conceiving, while secondary infertility occurs after a confirmed pregnancy(5). Over 15% of women worldwide suffer from primary or secondary infertility in which , secondary infertility affects 43% of women and 30.7% of men, with the majority of instances preventable(6).In Ethiopia the prevalence of primary and secondary infertility is 1.4% and 8.7% respectively(4).

Assisted Reproductive Technology (ART) has given people who are having trouble getting pregnant a spark of hope, making it possible for them to become parents when it wasn't possible before impacted by infertility conceive(7).It refers to fertility treatments that use eggs or embryos outside of a woman's body, such as in vitro fertilization (IVF) with or without intracytoplasmic sperm injection (ICSI), to produce successful pregnancies and healthy offspring(8).It also includes treatments such as gamete intra-fallopian transfer, zygote fallopian transfer, gamete and embryo cryopreservation, oocytes and embryo donation, and gestational surrogacy(9).

As of 2020, an estimated 8 million infants were produced through ART.(8) Every year, more than 2.5 million cycles are conducted, leading to over 500,000 births(10). Approximately 30-40% of couples attempting ART will have a live delivery after each treatment cycle(11).ART is responsible for 3.5% of births in 21 European nations, including 9.3% in Spain and 2.2% in the United States(12). During 2020, a total of 37,063 ART procedures were recorded by 67 centers across 15 African countries, with Ethiopia contributing 387 procedure making the utilization rate very low with an estimated 3 cycles per million population per annum(13).

Mainly ART is used to treat infertility due to different conditions like female factors (ovulational abnormalities and tubal factors) ,male factors (low sperm count) or idiopathic infertility(14). ART therapies become less successful when women starting ART at 30 to

34 years and have a 65% to 74% chance of having a live birth after three treatments, compared to 18% to 23% at 40 to 44 years(15). In Ethiopia, the clinical pregnancy rate per initiated IVF cycle was reported at 30.1% .However success rate varies by age, with up to 65–70% in women under 35 years, and around 30% in women aged 35 to 40(16).

Globally there is a low level of awareness about ART with greater rates in underdeveloped countries(17). Knowledge of ART varies based on socio demographic parameters such as age gender educational level childbearing status and prior experience with the procedure(18) .It is essential that infertile peoples understand assisted reproductive technologies in order to optimize and implement infertility treatment together(19).

In addition people's perceptions expectations and attitudes regarding the employment of these technologies all influence decision making(20) .Women faces financial(21), and cultural factors which influence the perception and attitude towards using ART(22) .social aspects of ART are crucial for regulating ART and have an impact on its long-term availability and use. This is due to the fact that public acceptability of ART can impact both the supply and demand for ART(23).

1.2 Statement of the problem

Infertility can have significant psychological and socioeconomic consequences for women, sometimes resulting in stigma, spousal abuse, divorce, extreme discomfort, anxiety, depression, and social isolation(24) .Based on these impact of infertility women explore several methods to have children in their marriage like allowing co-wives ,divorce or remarriage , adoption of children , and use of herbal medicine as an alternative way(25). Majority of them are unaware cause of infertility and the available treatments(26).In Ethiopia women chose traditional and religious strategy in managing their infertility problems(27).

The advent of assisted reproductive technologies (ART) has enabled people who would have otherwise been childless such as those with fecundity issues brought on by advanced age or health issues to become parents through surrogate motherhood, IVF, and artificial insemination(23).

In sub-Saharan Africa, the majority of patients seeking infertility treatment rely on medication, most likely as a result of their low socioeconomic standing and restricted access to assisted reproductive technology(28) The cost of therapy is typically too high for the majority of people ,where access to high-quality ART facilities is still an issue. Most ART clinics are private, and patients are responsible for covering their own medical expenses(29) .ART typically costs between $10,000 and $20,000 USD in the United States and between $3,000 and $6,000 USD in the majority of low and middle income countries, with significant differences across and within nations(30). Although The Ethiopian Reproductive Health strategic plan and Family Planning guideline added infertility to the list of services that need to be provided, the accessibility and the number of fertility centers appears to be limited(31).

There is a noticeable lack of knowledge towards ART mainly concerning its success rates, effectiveness, and age limitations to assess ART and its associated risks(18). Given the magnitude of infertility issues and the lack of awareness about ART solutions, there is a significant unmet demand for effective management and understanding of ART which is crucial for infertile couples before treatment(32).Moreover, despite this groundbreaking achievement in fertility clinics, many of women were still not considering ART as a choice of therapy(33) .Often misunderstood and stigmatized due to misconceptions, misinformation, and cultural issues(34). Cultural factors particularly have a crucial impact

in the acceptability and practice ART (35).Additionally ,the fear of medical risks and costs also have a significant impact on decision making ,leading some people to believe in God’s will and reject ART treatment(36).

Infertile women's knowledge and attitudes towards assisted reproductive technologies are crucial for enhancing infertility treatment and reducing associated issues .It also help patients accept treatments more realistically, set appropriate expectations, and reduce self-consciousness and anxiety(37).

In Ethiopia, the access to ART appears to be limited with only few private and one public centers giving the services in Addis Ababa resulting a low coverage. Also there is limited research and data on the assessment of knowledge and attitude towards the treatments, even with the recent emergence of fertility centers in Addis Ababa. This limitation of crucial information impedes informed decision-making for both physicians and couples seeking treatment, potentially affecting the navigation of treatment options, financial planning, emotional preparation, and setting realistic expectations.

1.3 Significance of the study

In Ethiopia, cultural believes, traditional practices and religion shape the health care system .In areas where giving birth is highly valued and appreciated being infertile can cause to women stigma and limit the access to information about their reproductive health, so increasing understanding of knowledge and attitude can enable women to make informed decision towards ART treatment.

This study is anticipated to evaluate knowledge and attitude of infertile woman towards ART among women attending infertility clinic. It will identify gaps and misinformation by understanding prevailing attitude and potential cultural and personal barriers .It also provide evidence for developing targeted education and counselling. Furthermore, the findings of this study offers baseline data for academic or students, and provide valuable insights for additional studies on related topics.

2. LITERATURE REVIEW

Since the late 1970s, Western nations have seen an increase in the use of Assisted Reproductive Technologies (ARTs), such as In Vitro Fertilization (IVF) with fresh or frozen embryos and Intra-Cytoplasm Sperm Injection (ICSI)(38).

ART Refers to in vitro procedures that involve sequential steps such as ovarian stimulation, egg retrieval, laboratory fertilization with sperm, and embryo transfer to the female reproductive tract, with options for donor eggs, sperm, and gestational carriers (8).But Surrogacy for women with absent or damaged uteri and child adoption are fraught with ethical, legal, moral, emotional, and psychological quandaries, such as conflicts of interest in pregnancy complications, difficulties in relinquishing the infant, and difficulties in accepting a congenitally abnormal infant(39).

Despite Africa's high rate of infertility, ART utilization remains low due to limited government and third-party funding, the dominance of profit-driven private ART centers, and the fact that less than 10% of ART centers are university-based, with only 10.9% being non-academic public clinics(7).

In sub Saharan Africa only few countries include infertility care in their within reproductive health policies(40). Although financial and social inequality plays a significant role in the use of ART treatment, there has been less focus on the socio demographic characteristics of women and men who achieve parenthood through ART versus natural conception(41).

2.1 Knowledge about ART

A cross sectional study conducted in Iran revealed that 19% of the study participants has poor knowledge , 34.5% has moderate knowledge and 46.6% has good knowledge(42).

A study conducted in Hungary found that 16.8 rated themselves as very knowledgeable about ART meanwhile ,34.7% considered themselves fairly knowledgeable ,41.5 % reported having some knowledge and only 7% indicated they had no knowledge at all(18).

A study conducted in Egypt found that 81.0 percent of couples had inadequate knowledge regarding assisted reproductive technology(19).A study conducted Nigeria reveals out of 150 patients, 76 (50.7%) were aware that ART treatment may not result in conception, whereas 54 (36.8%) were aware that it can also be used to treat male infertility

(43).Another study in Nigeria shows that among the respondents (34.1%) had heard about IVF, with (65.9%) never heard about it ,and the most common source of information was family(14.6%) followed by friends (9.8%) ,health facilities (4.4%),mass media 3.2% ,and the least common was through internet(3.1 %)(44).

A study conducted in Ghana revealed that among 437 respondents 66.8% heard about IVF and among them 23.6% got the information from the media,23.3% from other sources than media ,16.9% and 16.5% received the information from internet and health professional respectively(45).

2.1.1 Factors associated with knowledge

2.1.1.1 Demographic factors

A study conducted in Canada shows that among the men respondents 66.4% of has specific knowledge about ART procedures and treatments which is lower than women that is 75.6% ,and among men (30.7%) reported having "no" knowledge about ART, slightly higher than the preceding sample of women (22.4%)(46).

A study conducted in Hungary indicated that women demonstrated a higher level of self-rated knowledge regarding ART compared to men. The findings showed that women had a mean rate of accurate answers at 50.3%, whereas men had a mean accurate answer rate of 42%(18).

A cross sectional study in India showed that infertile women with higher education or whose spouses have higher secondary or higher education tend to have better knowledge about ART compared to those with lower education levels(32).Also a conducted in Ghana showed that students in health-related programs demonstrated higher levels of awareness than other students(47).

A study conducted in Iran revealed that compared to those with a diploma (2.80 ± 1.10) and graduates (2.76 ± 1.01), infertile participants with education level under diploma had a substantially higher (P=0.042) mean knowledge score of 3.27 ± 1.19(48).And another study conducted in Iran stated that the lowest level of knowledge about ART is connected to elementary school, while the highest level is tied to Ph.D. degrees(42).

A study in Ghana indicated a negative association between age and understanding of ARTs that is; Older persons had lower levels of awareness than younger persons with as this correlation was statistically significant ($R=-0.182$, $p<0.01$)(47). A study conducted in

Egypt revealed that the median knowledge score significantly differed by age, being higher among older age above 25 years(20).

2.2.12 Information and accessibility factors

The media's coverage of assisted reproductive procedures has a considerable impact on social attitudes and representations. The press has been shown to shape perceptions and convey meaning (49).A study conducted in Greece revealed that medical websites are the main source of knowledge on ART and reproductive health issues among students who are aware of the treatment(50).

A study conducted India revealed that an organized education program on assisted reproductive techniques was a sensible, economical, scientific, and successful way to increase understanding among infertile women attending selected infertility centers(51).

A study in Nigeria showed that the availability of ART clinics and the broader access to social media have can improve know ledges on ART(52).

2.2.1.3 Reproductive health factors

Parenting status and previous ART experience affect people's awareness about ART.A study in Hungary showed that parents with children had significantly higher self-rated knowledge than those without children (2.7 vs. 2.4, $P < 0.001$).Also Respondents with ART treatment experience and acquaintances exhibited higher mean self-rated knowledge compared to those without (3.8%, 2.8%, and 2.4%, respectively, $P < 0.001$). Similarly, those with prior experience with ART therapy had the highest real knowledge for all items, followed by those with acquaintances who had received ART treatment. Respondents with no prior experience with ART treatment had the lowest rate of right answers, with mean rates of 61% (13-88%) and 51.1% (10.1-73%), respectively(18).

A study conducted in Egypt showed that the median knowledge score is much higher among people who have children and have been infertile for more than ten years(20).

2.2 Attitude towards ART

A cross sectional study in Sri Lanka showed that among 126 study participants, more than half of them opposed to gamete donation (egg, sperm, and embryo), 98.4% opposed gestational surrogacy, and 67.5% thought that ART treatments could cause long-term health problems in the future(53).

A study conducted in Nigeria states that more than half of respondents(52%) had a negative attitude toward ART, with 53% preferring spiritual exercises like praying and fasting and 50.8% not encouraging their spouse to use ART(36).

In another survey in Nigeria states that of 150 patients, 28 (18.7%) viewed ART-conceived naturally normal, and 79 (52.7%) don't know what normal and abnormal means(43).

2.2.1 Factors associated with attitude

2.2.1.1 Socio demographic factor

A study conducted in Europe revealed that young people tend to be more receptive to new ideas and technologies, making them more likely to support ART(23).

A study conducted in Ghana stated that respondents aged 15-24 had a 0.13 lower likelihood of having a positive view of IVF services in Cape Coast. The difference was statistically significant (CI; 0.03, -0.663 $p < 0.014$,). Individuals aged 25-34 were 0.22 less likely to have a positive view of IVF services, whereas those aged 35-44 were 0.49 less likely to have either a positive or negative perception(45).

2.1.1.2 Cultural and social factors

Assisted Reproductive Technologies (ART) are frequently viewed as contrary to traditional parental norms in certain societies, as they blur the distinction between biological and social parentage, face cultural stigma, and create dilemmas for parents when disclosing their children's conception, posing challenges to social acceptance(54).

A study conducted in German stated that ART is socially accepted among German women, with 81% saying they would use them if required. Acceptance varies greatly by origin, with Polish and Turkish migrants having the highest approval percentages(55).

A study conducted in Ghana revealed that in their society, children born through ART are unnatural and not accepted, with many believing that children should only result from sexual intercourse between women and men, and ART babies are not seen as God's creation, as many favoured to use traditional remedies to treat infertility(56).

A study conducted in Nigeria showed that the majority of respondents (55.6%) embrace Artificial insemination, while 44.4% oppose it. Similarly, 32.8% of respondents agreed that Artificial insemination is a divergence from cultural standards, while 32.8% believed it is

forbidden(57).Also in another study in Nigeria revealed that lack of male partner support can hinder acceptance of in vitro fertilization(58).

2.1.1.3 Reproductive health factor

The duration of infertility was found to greatly impact the acceptability of ART.
Research indicates that women who have been infertile for 5 years or more are less likely to accept ART compared to those who have been infertile for less than 5 years(52). A study conducted in Nigeria showed that Individuals with a history of infertility within 10-12 months are 5 times less likely to have a good attitude towards ART compared to those who have waited longer (p-value=0.026, OR =0.200, 95.0% CI: 0.049-0.824)(36).

2.1.1.4 Financial factors

In Spain, the economic side of ART plays a significant role. Its reported that only persons with sufficient financial resources can access the more successful ART techniques(59).
A study in Iran found that the real costs advanced infertility services outweighed their benefits from the social perspective of Iranians, with economic factors such as low average expected income and high service costs playing a role, implying that government support for infertile couples could significantly encourage the use of infertility services in line with population growth policies(60).

A study in Nigeria showed that among 600 respondents 79.5 % would decline IVF because of the high cost of IVF treatment even if they are aware about; followed by 67.3 % may fail after paying the cost 79.7% said IVF is not accessible and 31% said IVF is not available(34). Also in another study conducted in Nigeria according to respondents' views on the cost of IVF, 135 (22.9%) believe that the cost of receiving IVF therapy is prohibitively expensive, while only 66 (11.2%)(44).

2. 3. Conceptual framework

After reviewing different literatures about factors affecting knowledge and attitude towards ART, the following conceptual frame work is adapted and modified(61). This is a set of interactions between knowledge and attitude with socio-demographic factors, cultural and social factors information and accessibility factors and Reproductive health factors accordingly.

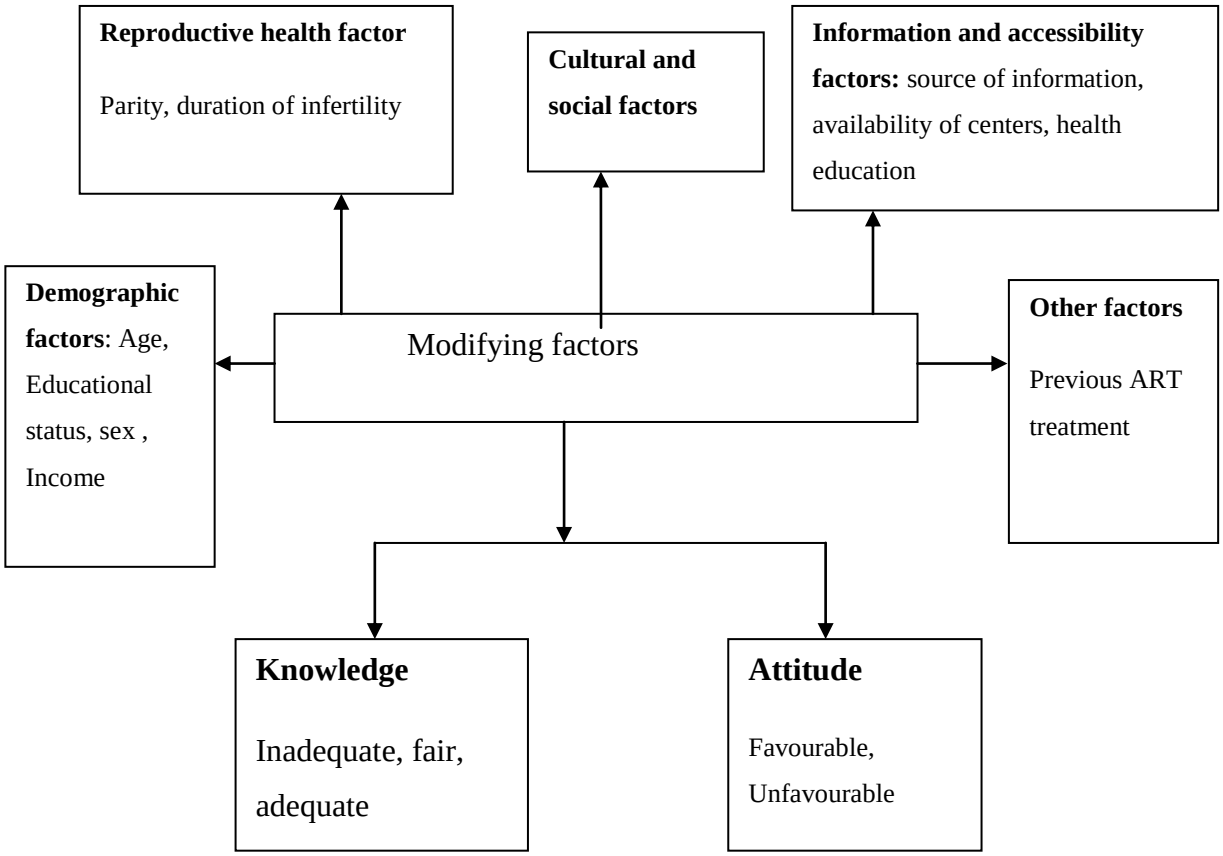

Figure 1 : Conceptual framework of the assessment of knowledge and attitude towards assisted reproductive technology among women attending infertility clinic, Addis Ababa, Ethiopia 2025

3. OBJECTIVES

3.1 General objectives

- To assess knowledge and attitude towards assisted reproductive technology among women attending infertility clinic from February 30 – April 15, 2025, Addis Ababa Ethiopia.

3.2 Specific objectives

- To assess women's level of knowledge towards ART, Addis Ababa, Ethiopia.
- To assess women's level of attitude towards ART, Addis Ababa, Ethiopia.
- To identify factors associated with knowledge and ,
- To identify factors associated with attitude towards ART, Addis Ababa, Ethiopia.

4. METHODS

4.1 Study area

This study was conducted Addis Ababa, capital city of Ethiopia which is located in the central highlands at an altitude of about 2,355 meters above sea level covering an area of approximately 530 square kilometres. Has a population of over 5 million with women making 50% of the population.

According to information obtained from the Ethiopian Federal Ministry of Health, there are four licensed and functional fertility centers in Ethiopia, all located in Addis Ababa. Of the four centers, one is a public fertility center, and the other three are private centers. And this study will be conducted at the one and only public center found in Ethiopia that is Michu Clinic; Center for Fertility and Reproductive Medicine, which is a public fertility center under Saint Paul's Hospital Millennium Medical College's (SPHMMC) department of obstetrics and gynaecology and is located in Addis Ababa, the capital city of Ethiopia. SPHMMC operates as a Federal Ministry of Health (FMOH) tertiary teaching referral hospital. The center for fertility and reproductive medicine is Ethiopia's first public IVF center since it opened its doors to patients in February 2019. The center provides male and female infertility treatment, including assisted reproductive technology, namely IVF, ICSI, and IUI.

4.2 Study period

This study was conducted from February 30 –April 15, 2025.

4.3 Study design

An institutional cross-sectional study design was used.

4.4 Source population

All infertile women in Addis Ababa.

4.5 Study population

All women attending SPHMMC fertility center and fulfil the inclusion criteria.

4.6 Inclusion and exclusion criteria

4.6.1 Inclusion criteria

- Woman above the age of 18-49 years attending infertility clinics

- Women diagnosed with infertility greater than 1 year
- Women seeking evaluation and treatment for infertility during the study period
- Women willing to participate and provide informed consent
- Able to understand and communicate in Amharic

4.62 Exclusion criteria

- Women who are undergoing ART treatment.

4.7 Sample size

Sample size was calculated using single population proportion formula based on an estimated prevalence of knowledge about ART of 50% since there was no research done in the same setting as this study concerning knowledge and attitude towards ART , with 95% confidence interval certainty, 5% confidence limits (degree of precision).

$$n = \frac{(\boldsymbol{Z}\,\boldsymbol{\alpha}/\mathbf{2})\boldsymbol{p}(\mathbf{1}-\boldsymbol{p})}{\boldsymbol{d2}} = \frac{(1.96\times1.96)\times0.5\times0.5}{0.05\times0.05} = 384$$

n=sample size

z= standard normal distribution

p= prevalence

d = margin of error

with 10% of non-respondent rate the sample size will be 422.

4.8 Sampling procedure

The study participants were selected by using simple random sampling method. A list of all eligible women attending the infertility clinic was obtained in daily basis, including each patient´s registration number, full name and age. Each eligible woman was assigned a unique serial number. Using this serial numbers, the lottery method was applied to randomly select participants until the required sample size was achieved .This process ensures that each participant has an equal chance of being chosen, contributing to the overall representativeness of the sample.

4.9 Study variables

4.9.1 Dependent variables

- Knowledge towards ART

- Attitude towards ART

4.9.2 Independent variables

- Socio demographic characteristics : Sex, age , educational status , income
- Reproductive health factors : parity , duration of infertility
- Information and accessibility factors: sources of information, availability of centers and health education
- Other factors: Previous ART treatment
- Cultural and societal factors

4.10 Data collection tool and procedure

The questionnaire was initially prepared in English and then translated to Amharic was translated back to English to check for any inconsistencies. The questionnaire had consisted structured questionnaire which include socio demographic information, reproductive history ,knowledge about ART and attitude about ART which are adapted and modified from published literature ,consistency of the questionnaire used on the literature was assessed by using Cronbach's alpha ($\alpha = 0.881$) was found to be in acceptable ranges (20).Then Data was collected by 2 nurses and one supervisor. For data collector and supervisor, relevant training was given by the investigator to make them familiar with the data collection too. The Data was collected through structured interviewer administered questionnaire by kobo toolbox. The information sheet was given and the consent was taken from each patients that are randomly selected .Data was collected among participant who are willed to participate and we got a total of 408 participants throughout our study period .The sampling was from patients who were not undergoing ART treatment. Then finally, collected data was submitted on regular basis to supervisors and the data was checked for completeness, consistency and error to be corrected before processing and analyzing data.

4.11. Operational definitions

ART:-is defined as a range of medical procedures used to assist individuals in achieving parenthood.

Infertility:-it is defined as inability to conceive a child with a regular unprotected sexual intercourse.

Knowledge: it is the ability to understand the risks, benefits and various techniques of ART. Given the knowledge question saying 'yes'=2 'no'=1 and ´0` for I don't know individuals who score <50% will have inadequate knowledge, ≤75% fair knowledge and adequate knowledge if ≥ 75% (20).For the purpose of categorizing knowledge, individuals who scored 50% or higher were recoded as having adequate knowledge (coded as 1), while those who scored below 50% were recoded as having inadequate knowledge (coded as 0).

Attitude: It's about individual beliefs and opinion about ART .It will be assessed on 5 five point likert scale ranging from 1-5 ,(1) score for strongly disagree (2) ,score for disagree (3), score for neutral (4), for agree (5) ,strongly agree. The total score of women's Attitude toward ART =45 and classified in to favourable (34-45), neutral (22-33) and unfavourable(9-21)(20).For the purpose of categorizing attitude individuals who scored 22 or higher were recoded as having favourable attitude (coded as 1), while those who scored below 22 were recoded as having unfavourable attitude (coded as 0).

Primary infertility: is defined as the failure to achieve a clinical pregnancy after 12 months or more of regular unprotected sexual intercourse in a woman who has never been pregnant before.

Secondary infertility: refers to inability to conceive after 12 months or more of regular unprotected sexual intercourse in a woman who has previously conceived at least once, regardless of the pregnancy outcome.

4.12 Data quality control

To ensure data quality, a pretested structured questionnaire was used. Training about purpose of the study, how to approach study subjects, and how to use the questionnaire was given for one day for the data collectors and supervisors. The pre-test was conducted on 5% of the actual sample size at Tikur Anbessa Specialized Hospital a week before data collection. The collected data was checked for the completeness, accuracy, and clarity by the principal investigator and supervisor daily after data collection and correction was made before the next data collection measure. Finally data clean up and cross checking was done before analysis.

4.13 Data analysis

Data collected through structured questionnaire on kobo tool was exported to excel and then imported to SPSS software version 25.0 for data cleaning and analysis. Descriptive

statistic including percentage, frequency distribution, mean and standard deviation was used to describe the data on knowledge and attitude and bivariate and multivariate logistic regressions was used to study association between dependent and independent variables. Variables with a p-value of < 0.25 in bivariate were a candidate for multivariate and those variables with a p-value of <0.05 in multivariate logistic regression were considered as a statistically significant factor for knowledge and attitude of ART.

4.14 Ethical consideration

This research proposal was approved by Ethical Review Committee of school of nursing and midwifery, Addis Ababa University (AAU) before the start of the study. Initially, Ethical clearance was obtained from research and ethics committee of school of nursing and midwifery, AAU. Official letter was written to the infertility center. After getting permission from the infertility center consent was obtained from participants for willingness and then informed verbal consent from study participants was sought often brief explanation of the purpose of the study. The respondents have the right to refuse participation or terminate their involvement at any point during the interview. They were informed that there is no incentive and harm for their participation in this study. The information provided by each respondent was kept confidential by not writing participant's name in the questionnaire.

4.15 Dissemination and utilization of result

The final finding of this study will be submitted to Addis Ababa University College of Health Science, Department Nursing and Midwifery. The finding of the research will also be disseminated to St. Pauls Hospital IVF centre, and other concerned bodies at different managerial level to enable them take recommendations into consideration during their planning process. Finally, the finding will be reported on the scientific forum workshops, seminars, and on other professional meetings and an effort will be made to publish in peer-reviewed journal.

5. RESULTS

5.1 Socio demographic characteristics of the respondents

Among 422 participants, total of 408 study participants agreed to participate in the study yielding a response rate of 96.7%.The mean age (SD) of the study participants was 34(±4.718) years were housewife and, mean monthly income of the participants were 5944(±2666.12) birr. We found that 225(55.1%) of the study participants reside in Addis Ababa, while 183(44.9%) live outside the city.

Table 1 Socio demographic characteristics of women who attend infertility clinic in Addis Ababa, Ethiopia, 2025(n=408)

Variables	Category	Frequency (n)	Percent (%)
Age	< 34	200	49
	≥ 34	208	51
Maternal Educational level	Unable to read and write	24	5.9
	Able to read and write	83	20.3
	Primary school	103	25.2
	Secondary school	100	24.5
	College and above	98	24
Paternal Educational level	Unable to read and write	26	6.4
	Able to read and write	60	14.7
	Primary school	89	21.8
	Secondary school	108	26.5
	College and above	125	30.6
Maternal occupation	House wife	216	52.9
	Merchant	48	11.8
	Government employee	44	10.8
	Private	64	15.7
	Other	36	8.8
Paternal occupation	Government employee	221	54.2
	Merchant	58	14.2
	Private	81	19.9
	Other	48	11.8
Residency	Addis Ababa	225	55.1
	Outside Addis Ababa	183	44.9
Family Income	≤ 5945	219	53.7
	>5945	189	46.3

5.2 Reproductive history

The reproductive history of the study participants reveals that more than half of the respondents (52.9%) had never been pregnant, suggesting a high proportion of women experiencing primary infertility. In contrast, 47.1% of the participants had at least one prior pregnancy, indicating secondary infertility. Regarding the duration of infertility nearly half of the participants (48.8%) experience infertility for a period of 5-10 years, 34.1% had been infertile for less than five years and 17.2% had been infertile for more than 10 years.

5.3 Sources of information

The majority of the respondents 284(69.6%) heard about ART, from this 99 (35.1%) respondents main source of information about ART was health facility.

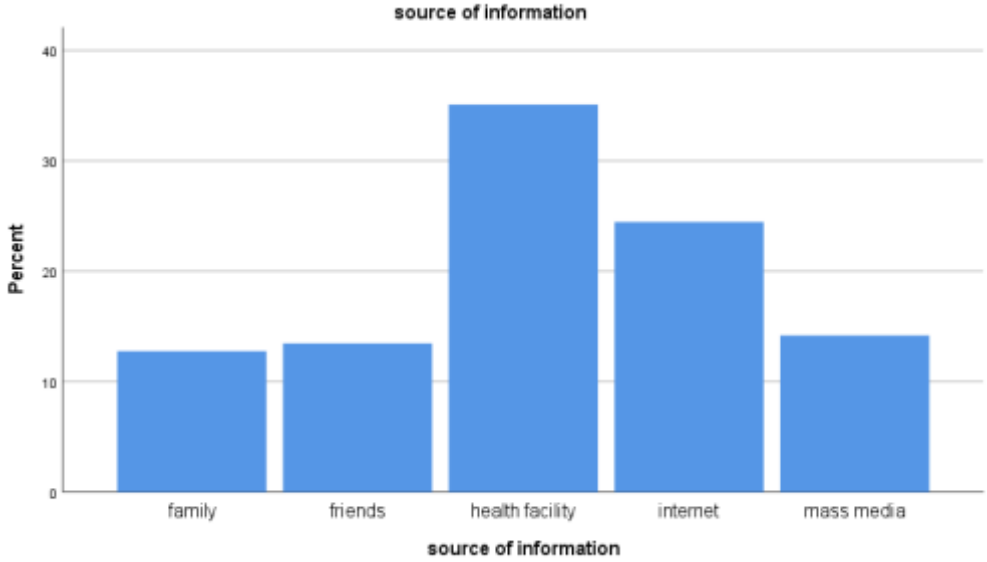

Figure 2 ：The percentage distribution of sources of information about ART among women attending infertility clinics in Addis Ababa, Ethiopia 2025..

5.4 Knowledge about ART

More than half of the respondents 267(65.4%) have limited awareness about ART. Knowledge of respondents about ART shows that 284(69.6%) heard about ART, and 156(38.2 %) know the types of ART treatment. Among the respondents who know about types of ART treatments 141(65.3 %) are aware about IVF, 41(19%) aware about IUI, 3(1.4%) aware about ICSI, 6 (2.8 %) are aware all types of ART treatment, and 25(11.6%) knows about other types of ART treatments.

This study reveals that the majority of the respondents (65.4%) possess inadequate knowledge while 28.4 demonstrate fair knowledge and mere 6.1% exhibit adequate knowledge.

Table 2 Knowledge about ART treatments among women attending infertility clinic in Addis Ababa, Ethiopia, 2025(n=408)

Items of knowledge questions	**Response**		
	Yes n(%)	**No n(%)**	**Idon't know n(%)**
Have you ever heard about ART	284(69.6)	124(30.4)	
There are indications to perform ART	178(43.6)	34(8.3)	196(48)
Do you know the types of ART treatments	156(38.2)	252(61.8)	
IVF means fertilizing eggs outside the body and transferring the embryo to the uterus	123(30.1)	62(15.2)	223(54.7)
IUI means placing sperm directly into the uterus to facilitate fertilization	43(10.5)	52(12.7)	313(76.7)
ICSI means injecting a single sperm into an egg to facilitate fertilization	11(2.7)	378(92.6)	19(4.7)
ART can involve donor sperm or egg	121(29.7)	50(12.3)	237(58.1)
The success rate of ART depends on age	227(55.6)	36(8.8)	145(35.5)
ART used to treat men infertility	162(39.7)	56(13.7)	190(46.6)
There are side effects in applying ART	201(49.7)	80(19.6)	127(30.1)
ART can fail	230(56.4)	80(19.6)	98(24)
There are ethical concerns related to ART	105(25.7)	60(14.7)	243(59.6)

5.5 Attitude towards ART treatments

From the total participants nearly half of 189(46.4%) of the study participants are supportive in idea of using ART to overcome infertility, 261(64%) agreed that ART should be provided in public healthcare, 155 (38%) recommend ART for other women seeking infertility treatment, majority of the respondents 319(78.2 %) think that their religious belief opposes ART, also 250(61.3%) belief that ART is not accepted in their society .

Among 408 Respondents 315(77.2%) favour spiritual solutions over ART treatments, 247(60.6%) don't belief ART babies are normal, and more than three-quarters of the respondents 339(83.1%) had strong opposition over the idea of sperm donor egg or sperm and surrogacy.

The data on attitude demonstrates that 62.3% of the study participants´ exhibit unfavourable attitude, 24.5% had neutral attitude and 13.2 % of them express a favourable attitude.

Table 3 Attitude towards ART treatments among women who attend infertility clinic in Addis Ababa, Ethiopia, 2025 (n=408)

Items of attitude questions	**Response**				
	SD n(%)	**DA n(%)**	**N n(%)**	**A n(%)**	**SA n(%)**
I am fine with the idea of applying ART to overcome infertility	18(4.4)	67(16.4)	134(32.8)	141(34.6)	48(11.8)
I believe ART should be provided in public healthcare settings, not only private clinics	3(0.7)	32(7.8)	112(27.5)	201(49.3)	60(14.7)
I would recommend ART to other women who are experiencing infertility	9(2.2)	96(23.5)	148(36.3)	117(28.7)	38(9.3)
My religion is not against ART	184(45.1)	135(33,1)	56(13.7)	32(7.8)	1(0.2)
Children born through ART are acceptable in our society	57(14)	193(47.3)	57(14)	49(12)	52(12.7)
I prefer ART than spiritual exercise	155(38)	160(39.2)	63(15.4)	29(7.1)	1(0.2)
I believe ART babies are normal	55(13.5)	192(47.1)	55(13.5)	47(11.5)	59(14.5)
I am comfortable, with the idea of donor eggs or sperm,	211(51.7	128(31.4)	41(10)	27(6.6	1(0.2)
I am comfortable with the idea of using a surrogate to carry a child for me.	238(58.3	101(24.8)	47(11.5)	22(5.4)	0

Notes; SD: strongly disagree ,DA: disagree, N : neutral ,A: agree , SA: strongly agree

5.6 Factors associated with knowledge about ART

For bivariate logistic regression analysis a total of fifteen variables were used and among these eight of the variables (age, maternal education, residency, paternal education, hearing about ART, source of information, duration of infertility and attitude) were all candidate variables for multi-variable analysis. After controlling the cofounders using the multivariate analysis model, age, paternal educational level, duration of infertility and attitude was significantly associated with knowledge about ART.

The study revealed that participants who are younger than 34 years are 3.64 times more likely to have adequate knowledge than participants who are greater than 34 years (AOR = 3.637, 95% CI: (1.805-7.329 p=0.001).Those with infertility lasting 5-10 years are 82% less likely to have adequate knowledge than those who are infertile for less than 5 years (AOR= 0.181; 95% CI: 0.088- 0.371p=0.001).Similarly participants whose partners were only able to read and write were about 83% less likely to have adequate knowledge than participants whose partners had college education and above(AOR= 0.173; 95% CI: 0.050-0.604 p=0.006).And lastly individuals with favourable attitudes are 10.186 times more likely to have adequate knowledge than individuals with unfavourable attitudes (AOR=10.186; 95% CI: 5.199-19.959 p=0.001).

Table 4 Candidates for multivariable analysis of factors associated with knowledge about ART among women attending infertility clinic Addis Ababa, Ethiopia, 2025 (n=408)

Variable	**Category**	**Knowledge**		**COR(95%CI)**	**AOR(95%CI)**	**P-value**
		Adequate Knowledge n(%)	**Inadequate Knowledge n(%)**			
Age	Less than 34	104 (52.0%)	96 (48.0%)	5.007(3.190,7.859	3.637(1.805,7.329)*	0.001
	≥ 34	37 (17.8%)	171 (82.2%)	1	1	
Maternal Education	Unable to read and write	4 (16.7%)	20 (83.3%)	0.192(0.061,0.601)	0.169(0.027,1.038)	
	Able to read and write	24 (28.9%)	59 (71.1%)	0.391(0.210,0.725)	0.832(0.294,2.353)	
	Primary school	31 (30.1%)	72 (69.9%)	0.413(0.232,0.737)	1.108(0.400,3.067)	
	Secondary school	32 (32%)	68 (68%)	0.452(0.254,0.805)	0.851(0.294,2.462)	
	College and above	50 (51)	48 (49%)	1	1	
Duration of Infertility	Less than 5 years	84 (60.4%)	55 (39.6%)	1	1	
	5–10 years	48 (24.1%)	151 (75.9%)	0.208(0.130,0.333)	0.181(0.088,0-371)*	0.001
	Greater than 10 years	9 (12.9%)	61 (87.1%)	0.097(0.044,0.210)	0.374(0.108,1.293)	
Residency	Addis Ababa	98 (43.6%)	127 (56.4%)	0.398(0.259,0.613)	1.560(0.780,3.120	
	Outside Addis Ababa	43 (23.5%)	140 (76.5%)	1	1	
Paternal Education	Unable to read and write	2 (7.7%)	24 (92.3%)	0.077(0.017,0.339)	0.422(0.063,2.841)	
	Able to read and write	8 (13.3%)	52 (86.7%)	0.142(0.062,0.323)	0.173(0.050,0,604)*	0.006

	Primary school	23 (25.8%)	66 (74.2%)	0.322(0.178,0.580)	0.604(0.221,1.646)	
	Secondary school	43 (39.8%)	65 (60.2%)	0.611(0.363,1.028)	0.988(0.379,2.579)	
	College and above	65 (52.0%)	60 (48.0%)	1	1	
Source of Information		16	20			
	Family	(44.4%)	(55.6%)	2.756(1.022,7.4269	1.668(0.453,6.151)	
		18	20			
	Friends	(47.4%)	(52.6%)	3.100(1.166,8.242)	1.606(0.430,5.997	
	Health	52	47			
	Facility	(52.5%)	(47.5%)	3.811(1.644,8.831)	2.084(0.674,6.443)	
		37	32			
	Internet	(53.6%)	(46.4%)	3.983(1.652,9.603)	1.838(0.566,5.970)	
	Mass Media	9 (22.5%)	31 (77.5%)	1	1	
Attitude Toward ART		34	220			
	Unfavourable	(13.4%)	(86.6%)	1	1	
		107	47			
	Favourable	(69.5%)	(30.5%)	14.731(8.952,24.240)	10.186(5.199,19.959)*	0.001
Heard About ART			117			
	No	9 (7.1%)	(92.9%)	11.440(5.584,23.437)	0.000(0.000,-)	
		132	150			
	Yes	(46.8%)	(53.2%)	1	1	

Notes: 1, reference category: * significance at $p<0.05$ Abbreviations: COR, crude odds ratio; AOR, adjusted odds ratio; CI, confidence interval

5.7 Factors associated with attitude towards ART treatment

For bivariate logistic regression analysis a total of fifteen variables were used and among these seven of the variables (age, maternal education, residency, paternal education, hearing about ART, duration of infertility and attitude) were all candidate variables for multi-variable analysis. After controlling the cofounders using the multivariate analysis model, hearing about ART and knowledge was significantly associated with attitude towards ART.

This study showed that participants who had never heard about ART are 52% less likely to have favourable attitude than participant who heard about ART (AOR = 0.479, 95% CI: (0.251- 0.913p=0.025).Also participants with inadequate knowledge about ART are 91% less likely to have favourable attitude than with those adequate knowledge (AOR= 0.090 95% CI: 0.049- 0.166 p=0.001).

Table 5 candidates for multivariable analysis of factors associated with attitude about ART among women attending infertility clinic Addis Ababa, Ethiopia, 2025 (n=408)

Variable	Category	Attitude		COR(95%CI)	AOR(95%CI)	P-value
		Favourable Attitude (n, %)	Unfavourable Attitude (n, %)			
Age	Less than 34	99 (49.5%)	101 (50.5%)	0.367(0.242,0.555)	1.178(0.682,2.033)	
	≥ 34	55 (26.4%)	153 (73.6%)	1	1	
Residency	Addis Ababa	102 (45.3%)	123 (54.7%)	0.479(0.316,0.725)	1.510(0.901,2.530)	
	Outside Addis Ababa	52 (28.4%)	131 (71.6%)	1	1	
Maternal Education	Unable to read and write	7 (29.2%)	17 (70.8%)	0.485(0.185,1.274)	1.436(0.442,4.795)	
	Able to read and write	31 (37.3%)	52 (62.7%)	0.702(0.387,1.275)	1.519(0.671,3.438)	
	Primary school	36 (35.0%)	67 (65.0%)	0.633(0.359,1.116)	1.090(0.503,2.363)	
	Secondary school	35 (35.0%)	65 (65.0%)	0.634(0.358,1.123)	0.836(0.379,1.846	
	College and above	45 (45.9%)	53 (54.1%)	1	1	
Duration of Infertility	Less than 5 years	72 (51.8%)	67 (48.2%)	0.3940(2.035,7.630)	1.010(0.430,2.372)	
	5–10 years	67 (33.7%)	132 (66.3%)	1.861(0.979,3.537)	1.160(0.529,2.543)	
	Greater than 10 years	15 (21.4%)	55 (78.6%)	1	1	
Knowledge About ART	Inadequate Knowledge	47 (17.6%)	220 (82.4%)	14.731(8.952,24.240)	0.090(0.049,0.166)*	0.001
	Adequate Knowledge	107 (75.9%)	34 (24.1%)	1	1	
Heard About ART	No	20 (15.9%)	106 (84.1%)	4.799(2.819,8.168)	0.479(0.251,0.913*	0.025
	Yes	134 (47.5%)	148 (52.5%)	1	1	
Paternal Education	Unable to read and write	4 (15.4%)	22 (84.6%)	0.203(0.066,0.624)	0.686(0.186,2.524)	
	Able to read and write	13 (21.7%)	47 (78.3%)	0.309(0.153,0.628)	0.801(0.322,1.990)	
	Primary school	32 (36.0%)	57 (64.0%)	0.628(0.360.1.097)	1.492(0.691,3.222)	
	Secondary school	46 (42.6%)	62 (57.4%)	0.830(0.494,1.394)	1.352(0.655,2.789)	

College and above	59 (47.2%)	66 (52.8%)	1	1

Notes:1, reference category: * significance at p<0.05 Abbreviations: COR, crude odds ratio; AOR, adjusted odds ratio; CI, confidence interval

6 .DISCUSSION

The study was conducted to assess knowledge and attitude towards ART among women attending infertility clinics in Addis Ababa. This finding shows that the majority of the participants 65.4 % had inadequate knowledge about ART which is consistent with the previous study conducted in Egypt(63.8%)(20). On the other hand its somehow higher than the study conducted in Hungary (41.5%).The discrepancy could be due to the fact that, in the Hungarian study participants self assessed their knowledge about ART. However, this result is lower than the study conducted in Egypt (81%).The possible explanation for these difference might be due to the difference in sample size and study population (i.e. the study in Egypt was conducted among one hundred infertile couples).

The finding of this study shows that the majority of the participants are heard about IVF (65.3%),which is consistent to the study conducted in Ghana(66.8%)(45).But it is somehow higher than the study conducted in Nigeria(34.1%)(44).The possible explanation for this difference could be due to the fact that this study targets women actively seeking infertility treatments, likely leading to higher awareness of ART options. In contrast the Nigerian study includes a larger population potentially contributing to lower knowledge.

The majority of the study participant´s main source of information was health facility (35.1%) which is consistent with the study conducted in Nigeria34.6%(52). the finding is higher than the study conducted in Ghana (16.5%)(45).The possible reason might be the difference in the study area since our study is conducted within infertility clinics, while the Ghanaian study was conducted on the community setting. however this result is lower than the study conducted in Iran(53.2%)(22). The difference might be due to the study participants since the Iran study was conducted on participants who are already applied for the ART treatment.

The finding of the current study shows that 39.7% of the participants knows that ART used to treat men infertility which is similar with the study conducted in Nigeria (35.1%)(9).the study result is lower than the study conducted on the same country Nigeria(52).The difference might be due to the study participants since Nigerian study includes both male and female participants.

This study also indicates that age, paternal education ,duration infertility and attitude significantly influence participants knowledge on ART .Women who are younger were about 3.6 times more likely to have adequate knowledge about ART than women who are older(AOR = 3.637, 95% CI: 1.805 -7.329 p<0.001) which is similar to the study conducted in Ghana (47).Also the study shows that women who have a partner with college education and above is positively associated with having adequate knowledge about ART , as those whose partners were only able to read and write were 83 % less likely to have adequate knowledge(AOR= 0.173; 95% CI: 0.050-0,604 p=0.006) which is the same as the study conducted in India(32).This might be justified that the potential effect of partners educational level on the participants knowledge of ART.

The present study found that participants those with infertility lasting 5-10 years are 82% less likely to have adequate knowledge than those who are infertile for less than 5 years (AOR= 0.181; 95% CI: 0.088- 0.371 p< 0.001) ,which is consistent with the study conducted in Nigeria(9),but it is different from the study conducted in Egypt which revealed that knowledge score is high among women with longer duration of infertility (>10 years)(20).The discrepancy may be due to difference in health system infrastructure and access to fertility services ,since Egypt has a well-established fertility centers ,individual with longer duration of infertility may remain engaged in care longer and can access more information.

Knowledge about ART and attitude towards ART were found to have a significant positive relationship (AOR=10.186; 95% CI: 5.199-19.959 p<0.001).Indicating that participants' attitudes tend to improve as their knowledge increases which is similar to the study conducted in Saudi Arabia(62) ,India (32)and Iran (63).

In the findings of the current study 62.3% of the study participants had unfavourable attitude towards ART which is consistent with the study conducted in Nigeria(52%)(36).However it is much higher than the study conducted India(17.8%)(32) and in Hungary (3%)(18). The reason for this variation might be due to the difference in socio-economic status, socio-demographic characteristics, and broader cultural and healthcare system.

The findings of this study reveal that only 26% participants believe that ART conceived babies are normal which is consistent with the study conducted in Nigeria(19.8)(64).However it is lower than the study reported in Ghana(44.6%)(45).The

discrepancy may be due to the fact that the Ghanaian study focused specifically on IVF which may be more widely known and accepted than other types of ART.

In our findings 61.3% of the study participants believe that children born through ART are not acceptable in their society which is much higher than the study conducted in Saudi Arabia (9.5%)(65).The possible reason might be due to different characteristics of the study participants, since the Saudi study targeted women living across all regions the country.

The finding of this study shows that 83.1% of the study participants had negative attitude towards practicing gestational surrogacy which is consistent with the study conducted in Sri Lanka 98.4%(53).but it is higher than the study conducted in Lebanon(15.5%)(66) .The discrepancy might be due to the fact that the Lebanon study participants were medical students and lawyers.

In our study 64.4% of the study participants belief that ART should be provided in all healthcare facilities, this result aligns with the study conducted in Nigeria (57.4%)(52).This can be justified as there is a growing public demand for equitable access on infertility treatment across all level of healthcare system.

In our study only 6.8% of the participant were fine with idea of donor sperm or egg this result is consistent with the study conducted in Nigeria(10.6%) (36) but it is somehow lower than the study conducted in Sri Lanka 32.% for donor sperm and 34.5% for egg donor .the discrepancy may be attributed to different study population, the Sri Lanka study included sub fertile individuals who may have been earlier in their treatment journey.

This study showed that participants who had never heard about ART are 52% less likely to have favourable attitude than participant who heard about ART (AOR = 0.479, 95% CI: (0.251, 0.913).Also participants with inadequate knowledge about ART are 91% less likely to have favourable outcome than with those adequate knowledge (AOR= 0.090 95% CI : 0.049-0.166),this study is consistent with the study conducted in Egypt(20),supporting the idea increase awareness and knowledge about ART contribute to more positive attitude towards its use

7 .STRENGTH AND LIMITITAION OF THE STUDY

Strength of the study

- Structured interviewer administered questionnaire was used to avoid misunderstanding of the questions

Limitations of the study

- Since this study is used a cross-sectional study design. It does not show a true cause-effect relationship between dependent and independent variables.
- Conducting the study in one fertility center may limit the generalizability of the findings to other private clinics.

8 .CONCLUSIONS AND RECOMMENDATION

8.1 Conclusion

The study revealed that while most women attending infertility clinic had heard about ART, overall knowledge and understanding were limited with 6.1% demonstrating adequate knowledge and many were unaware of procedures like IUI and ICSI. Attitude towards ART were also unfavourable with only 13.2% of them exhibit favourable attitude .It influenced by religious belief, societal norms and misconceptions. Better knowledge was associated with factors like age, paternal educational level, duration of infertility and positive attitude. Favourable attitude was associated with high awareness and adequate knowledge indicating that understanding plays a key role in shaping positive perceptions and acceptance of the treatments.

8.2 Recommendations

For healthcare providers: provide clear information and educational counselling that clearly outlines potential risk and benefits of ART treatment to empower women to make informed decision.

For study participants: to rely on information obtained from health professionals instead of other informal sources by asking detailed questions about ART procedures, indications ,side effect ,cost and others.

To researchers: to make further qualitative research to explore deeper cultural and religious factors influencing attitude towards ART

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10. ANNEX

Annex I: Information Sheet

Hello my name is Eman Nassir I am studying a postgraduate degree in maternity and reproductive health nursing at Addis Ababa University. I am conducting research on assessment of knowledge and attitude towards assisted reproductive technology. Because you meet the study's requirements, you were chosen and invited to participate. You are not need to give names, and I want to reassure you that no information will be shared with third parties. We will utilize the data to suggest potential changes to those clinics after assessing women's knowledge and attitude towards ART and influencing factors. There is no risk associated with your participation in this study. Whether you choose to participate or not, all the services you receive as any member of this community will continue and nothing will change. Your participation in this research may not directly provide you a certain benefit as an individual. There are no side effects and known risks related with this study. You have full right not to participate or to discontinue any time if you feel discomfort. If you are voluntary to participate, I will continue to give of the questionnaire and answer the questions it may takes 15-20 minutes. However, your honest answer for every question is needed to understand the problem.

Annex II: Consent form

I understood the purpose of this study. Participating in this study has not put me in danger or caused me harm. I have been informed that the information I provide will only be used for this study. I have also been informed that one can refuse to participate in the study. Based on the above information I agree to participate in the research voluntarily.

Participant signature……..

Name of data collector: ……. Signature……..

Name of supervisor…….Signature ……

Contact address……..……..

Annex III: English Version Questionnaire

English Questionnaire Code ---------- date ----------

Part one: Socio demographic characteristics

SN	**Questions**	**Response**
101	Age	_____
103	Educational level	1 unable to read and write 2 able to read and write 3 primary school 4 secondary school 5 college and above
104	Maternal Occupation	1 house wife 2 merchant 3 government employee 5 private 6 other
105	Family income	_____
106	Residency	1 .Addis Ababa 2 .Outside Addis Ababa

107	Number of pregnancy	1. None 2. 1 3. 2 4. ≥ 3
108	Number of delivery	1. none 2 . 1 3 . 2
109	Number of abortion	1 . none 2 .1 3 .2

110	Number of live children	1 None 2 1 3 2
111	Number of still birth	1 none 2 1 3 2
113	Duration on infertility	1. <5 years 2 .5-10 years 3 .> 10 years

Part two: knowledge towards ART

SN	**Questions**	**Response**
201	Have you ever heard about ART	1. no 2 .yes
202	If yes for **Q201**,From where you got the information?	1 health facility 2 family 3 friends 4 mass media 5 internet 6 other
204	Do you know there are indications to perform ART treatment?	0. No 1. I don't know 2. Yes
205	Do you know the types of ART treatments	1. No 2. Yes
206	If yes for **Q 205**,which type of ART do you know	1. IVF 2. IUI 3. ICSI 4. All 5. Other
207	IVF means fertilizing eggs outside the body and transferring the	0. No 1. I don't know 2 Yes

	embryo to the uterus	
208	IUI means placing sperm directly into the uterus to facilitate fertilization	0. No 1. I don't know 2 . Yes
209	ICSI means injecting a single sperm in to an egg to facilitate fertilization	0. No 1. I don't know 2. Yes
210	ART can involve donor sperm or egg	0. No 1. I don't know 2. Yes
211	the success rate of ART depends on age	0. No 1. I don't know 2. Yes
212	ART used to treat men infertility	0. No 1. I don't know 2 .Yes
213	There are side effects in applying ART	0. No 1. I don't know 2. Yes
214	ART can fail	0. No 1. I don't know 2. Yes
215	There are ethical concerns related to ART	0. No 1. I don't know 2. Yes

Part 3: Attitude towards ART

301	I am fine with the idea of applying ART to overcome infertility	1.Strongly disagree	2.disagree	3.neutral	4.agree	5.Strongly agree
302	I believe ART should be provided in public healthcare settings, not only private clinics	1.Strongly disagree	2.disagree	3.neutral	4.agree	5.Strongly agree

303	I would recommend ART to other women who are experiencing infertility	1.Strongly disagree	2.disagree	3.neutral	4.agree	5.Strongly agree
304	My religion is against ART	1.Strongly disagree	2.disagree	3.neutral	4.agree	5.Strongly agree
305	Children born through ART are acceptable in our society	1.Strongly disagree	2.disagree	3.neutral	4.agree	5.Strongly agree
306	I prefer ART than spiritual exercise	1.Strongly disagree	2.disagree	3.neutral	4.agree	5.Strongly agree
307	I believe ART babies are normal	1.Strongly disagree	2.disagree	3.neutral	4.agree	5.Strongly agree
308	I am comfortable, with the idea of donor eggs or sperm,	1.Strongly disagree	2.disagree	3.neutral	4.agree	5.Strongly agree
309	I am comfortable with the idea of using a surrogate to carry a child for me.	1.Strongly disagree	2.disagree	3.neutral	4.agree	5.Strongly agree

Annex IV: የመረጃ ወረቀት

ጤና ይስጥልኝ ስሜ ኢማን ናሲር ይባላል። በአዲስ አበባ ዩኒቨርሲቲ በወሊድ እና ስነ ተዋልዶ ጤና ነርስ የድህረ ምረቃ ዲግሪ እየተማርኩ ነው። ለታገዘ የስነ ተዋልዶ ቴክኖሎጂ እውቀት እና አመለካከት ግምገማ ላይ ጥናት እያካሄድኩ ነው። የጥናቱ መስፈርቶችን ስለሚያሟሉ፣ እርስዎ እንዲሳተፉ ተመርጠዋል እና ተጋብዘዋል። ስም መስጠት አያስፈልግዎትም፣ እና ምንም አይነት መረጃ ለሶስተኛ ወገኖች እንደማይጋራ ላረጋግጥልዎ እፈልጋለሁ። መረጃውን በእነዚያ ክሊኒኮች ላይ ሊደረጉ የሚችሉ ለውጦችን ለመጠቆም እንጠቀማለን የሴቶች እውቀት እና አመለካከት ስለ ART እና ተፅዕኖ ፈጣሪዎች ከገመገምን በኋላ። በዚህ ጥናት ውስጥ ከመሳተፍዎ ጋር የተያያዘ ምንም አይነት አደጋ የለም። ለመሳተፍ መረጥክም አልመረጥክም እንደ ማንኛውም የዚህ ማህበረሰብ አባል የምታገኛቸው አገልግሎቶች ሁሉ ይቀጥላሉ እና ምንም አይለወጥም። በዚህ ጥናት ውስጥ ያለዎት ተሳትፎ እንደ ግለሰብ የተወሰነ ጥቅም በቀጥታ ላይሰጥዎት ይችላል። ከዚህ ጥናት ጋር የተያያዙ የጎንዮሽ ጉዳቶች እና የታወቁ አደጋዎች የሉም. ምኞት ከተሰማዎት በማንኛውም ጊዜ ላለመሳተፍ ወይም ላለማቋረጥ ሙሉ መብት አለዎት። ለመሳተፍ ፈቃደኛ ከሆንክ መጠይቁን መስጠቴን እቀጥላለሁ እና ከ15-20 ደቂቃ ሊፈጅ የሚችለውን ጥያቄዎች እመልሳለሁ። ይሁን እንጂ ችግሩን ለመረዳት ለእያንዳንዱ ጥያቄ ትክክለኛ መልስዎ ያስፈልጋል።

Annex V: የፍቃድ ቅፅ

የዚህ ጥናት ዓላማ ተረድቻለሁ። በዚህ ጥናት ውስጥ መሳተፍ አደጋ ውስጥ አላስቀመጠኝም ወይም ጉዳት አላደረሰብኝም። የማቀርበው መረጃ ለዚህ ጥናት ብቻ እንደሚውል ተነግሮኛል። በተጨማሪም አንድ ሰው በጥናቱ ውስጥ ለመሳተፍ እምቢ ማለት እንደሚችል ተነግሮኛል. ከላይ ባለው መረጃ መሰረት በጥናቱ በፈቃደኝነት ለመሳተፍ ተስማምቻለሁ።

የተሳታፊ ፊርማ .....

የመረጃ ሰብሳቢው ስም፡- ..... ፊርማ .....

የተቆጣጣሪው ስም .....

የአድራሻ አድራሻ .....

Annex VI: የአማርኛ ስሪት መጠይቅ

መጠይቅ ኮድ ---------- ቀን ----------

ክፍል አንድ: ስለ ተጠያቂዎቹ ያለ መረጃ

SN	ጥያቄዎ	ምላሽ
101	እድሜ	_____
103	የትምህርት ደረጃ	1. ማንበብ እና መጻፍ እና መፃፍ የማይችል 2. ማንበብ እና መፃፍ የሚቸል 3. የመጀመርያ ደረጃ ት/ቤት 4. ሁለተኛ ደረጃ ት/ቤት 5. ኮሌጅ እና ከዛ በላይ
104	የስራ ዓይነት	1. የቤት እመቤት 2. ነጋዴ 3. የመንግስት ሰራተኛ 4. የግል ስራ 5. ሌላ(ያስረዱ(
105	የገቢ መጠን	
106	መኖሪያ ቦታ	1. አዲስ አበባ 2. ከአዲስ አበባ ውጭ

107	የእርግዛና ብዛት	1. ምንም 2. 1 3. 2 4. ≥ 3
108	የወሊድ ብዛት	1. ምንም 2. 1 3. 2
109	የፅንስ ማቋረጥ ብዛት	1. ምንም 2. 1 3. 2
110	በሕይወት ያሉ ልጆች ብዛት	1. ምንም 2. 1 3. 2

111	እንደተወለደ የሞተ ልጅ ብዛት	1. ምንም 2. 1 3. 2
113	የመካንነት ግዜ	1. <5 አመት 2. 5-10 አመት 3. > 10 አመት

ክፍል ሁለት: ስለ ART ያለው እውቀት

SN	ጥያቄዎች	ምላሽ
201	ስለ ART (በቴክኖሎጂ የታገዘ ወላድነት) ሰምተው ያውቃሉ?	1. አይ 2. አዎ
202	ለ መጠይቅ ቁጥር Q201 መልሶ አዎ ከሆነ, ስለ ART ከየት ነው የሰሙት?	1. ጤና ተቋም 2. ቤተሰብ 3. ጓደኞች 4. መገናኛ ብዙኃን 5. ከበይነ መረብ ወይንም ኢንተርኔት 6. ሌላ (ያስረዱ)
204	በቴክኖሎጂ የታገዘ ወላድነት ለመጠቀም መታየት ያለባቸው አመላካቾች አሉ	0.አይ 1. አላውቅም 2. አዎ
205	የበቴክኖሎጂ የታገዘ ወላድነት ህክምና ዓይነቶችን ያውቃሉ?	1. አይ 2. አዎ
206	ለመጠይቅ Q205 መልሶ አዎ ከሆነ፣ የትኛውን የ ART ዓየነት ያውቃሉ?	1. IVF 2. IUI 3. ICSI 4. ሌላ 5. ሁሉንም

207	IVF ማለት እንቁላሎችን ከአካል ውጭ ከዘር ፍሬ ፈሳሽ ጋር በማዋሃድ ቀጥሎም ወደ ማህፀን ማስገባት ማለት ነው	0.አይ 1. አላውቅም 2. አዎ
208	IUI ማለት የዘር ፍሬ ፈሳሽን በቀጥታ ወደ ማህፀን በማስገባት እርግዝና እንዲፈጠር የማገዝ ሂደት ነው	0.አይ 1. አላውቅም 2. አዎ
209	ICSI ማለት አንድ የዘር ፍሬ ፈሳሽ በቀጥታ ወደ አንድ እንቁላል በማስገባት እርግዝናን እንዲፈጠር ማገዝ ነው	0.አይ 1. አላውቅም 2. አዎ
210	በቴክኖሎጂ የታገዘ ወላድነት አንዳንድ ግዜ በለገሰ የዘር ፍሬ ፈሳሽ ወይንም እንቁላል በመጠቀም ሊካሄድ ይችላል	0.አይ 1. አላውቅም 2. አዎ
211	በቴክኖሎጂ የታገዘ ወላድነት የመሳካት ዕድል ከዕድሜ ጋር የተቆራኘ ነው	0.አይ 1. አላውቅም 2. አዎ
212	በቴክኖሎጂ የታገዘ ወላድነት በመጠቀም የወንድ መካንነት ማከም ይቻላል	0.አይ 1. አላውቅም 2. አዎ
213	በቴክኖሎጂ የታገዘ ወላድነት ሊያስከትላቸው የሚችሉ የጎንዮሽ ጉዳቶች አሉ	0.አይ 1. አላውቅም 2. አዎ
214	በቴክኖሎጂ የታገዘ ወላድነት ሁል ግዜ ሊሳካ አይችልም	0.አይ 1. አላውቅም 2. አዎ

215	በቴክኖሎጂ የታገዘ ወላድነት ብተመለከተ የሚነሱትን ስነምግባራዊ ጥያቄዎች አሉ	0.አይ 1. አላውቅም 2. አዎ

ክፍል 3፡ ስለ ART ያለው አመለካከት

301	በቴክኖሎጂ የታገዘ ወላድነትን በመጠቀም መካንነትን መከላከል ልክ ነው ብዬ አስባለሁ	1.በጣም አልስማማም	2.አልስማማም	3.ገለልተኛ	4.እስማማለሁ	5.በጣም እስማማለሁ
302	በቴክኖሎጂ የታገዘ ወላድነት በግል የጤና ተቋማት ብቻ ሳይሆን የመንግስት ጤና ተቋማት ላይም መሰጠት አለበት ብዬ አምናለሁ	1.በጣም አልስማማም	2.አልስማማም	3.ገለልተኛ	4.እስማማለሁ	5.በጣም እስማማለሁ
303	በመካንነት ለሚሰቃዩ ሲቶች በቴክኖሎጂ የታገዘ ወላድነት'ን እመክራለሁ	1.በጣም አልስማማም	2.አልስማማም	3.ገለልተኛ	4.እስማማለሁ	5.በጣም እስማማለሁ
304	እምነቴ በቴክኖሎጂ የታገዘ ወላድነት ን እንድጠቀም ይፈቅዳል	1.በጣም አልስማማም	2.አልስማማም	3.ገለልተኛ	4.እስማማለሁ	5.በጣም እስማማለሁ
305	በ በቴክኖሎጂ የታገዘ ወላድነት በመታገዝ የተወለዱ ልጆች በማህበረሰባችን ተቀባይነት አላቸው	1.በጣም አልስማማም	2.አልስማማም	3.ገለልተኛ	4.እስማማለሁ	5.በጣም እስማማለሁ
306	መካንነትን ለመከላከል ከመንፈሳዊ ህክምናዎች ይልቅ ARTን	1.በጣም አልስማማም	2.አልስማማም	3.ገለልተኛ	4.እስማማለሁ	5.በጣም እስማማለሁ

	እመርጣለሁ					
307	በ በቴክኖሎጂ የታገዘ ወላድነት በመታገዝ የተወለዱ ልጆች ተፈጥሮአዊ ናቸው ብዬ አስባለው	1.በጣም አልስማማም	2.አልስማማም	3.ገለልተኛ	4.እስማማለሁ	5.በጣም እስማማለሁ
308	የዘር ፈሳሽ እና እንቁላል ልገሳ ችግር አለው ብዬ አላስብም	1.በጣም አልስማማም	2.አልስማማም	3.ገለልተኛ	4.እስማማለሁ	5.በጣም እስማማለሁ
309	በእኔ ምትክ ሌላ ሴት እርግዝናዬን መሸከሚ ችግር አለው ብዬ አላስብም	1.በጣም አልስማማም	2.አልስማማም	3.ገለልተኛ	4.እስማማለሁ	5.በጣም እስማማለሁ