# Clients' knowledge and satisfaction with outpatient pharmacy services and associated factors at Felege Hiwot comprehensive specialized hospital, Ethiopia: A cross-sectional study

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## Abstract

**Objective:** This study aimed to assess patient knowledge and satisfaction and associated factors with outpatient pharmacy service at Felege Hiwot comprehensive specialized hospital.

**Design, setting and participants:** An institution-based cross-sectional study was conducted at Felege Hiwot comprehensive specialized hospital on patients getting outpatient Pharmacy service from 01 March 2022 to 30 May 2022. The study participants were selected by simple random sampling method.

**Main outcome measured:** Patients' knowledge and satisfaction with pharmacy service was measured by a structured questionnaire and Data were collected, cleared, and coded, then entered into EPI Info (Epidemiological information. version 7.1.5.2) and analyzed using SPSS (version 25).

**Results:** The overall knowledge result of the respondents showed that only 13.3% of individuals have good drug knowledge and 72.01% of respondents were satisfied with the outpatient pharmacy service. Following up on the multivariate analysis of service modality patients by credit (AOR: 5.50 (1.71–17.74), who are with the occupation of merchants (AOR: 0.09 (0.01–0.83)) and labeling (AOR: 3.13 (1.58–6.20) had an association with drug knowledge. Multivariate analysis showed that waiting time, dispensing time and privacy had an association with satisfaction. When we consider waiting time; respondents with 3–6 min, 6.1–9 min and >9 min waiting times are 0.06 times, 0.02 times, and 0.01 less likely satisfied compared with respondents having waiting time <3 min. It shows that as the patient stays without getting serviced for a long time, satisfaction decreases.

**Conclusions:** Overall, around three-fourths of the respondents were satisfied with the outpatient pharmacy services which is approaching the national satisfaction assessment result. Respondents were strongly satisfied with Dose, route, frequency, and duration. However, they were strongly dissatisfied with the name of the drug. After the multivariate analysis privacy, waiting time, and dispensing time had an association with patient satisfaction.

## Keywords

Hospital, outpatient pharmacy, drug knowledge, patient satisfaction

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## Introduction

Medication knowledge of patients is the extent of awareness about the drug that they are going to take including the name of the drug, indication, dose, dosage regimen, adverse effects, precautions to be taken during treatment, contraindications, drug/food interaction or advice on storage conditions.[1] Most researchers agree that patient satisfaction is a multidimensional concept and is accompanied by service given by health professionals and the level is measured according to the perception and expectation of patients towards that service.[2–6]

Patient satisfaction is one of the main components of quality of care and it is a quality indicator for measuring the quality of service given and used for quality control, quality assurance, and quality improvement activities in the healthcare system.[7–11] So, we can determine the performance of health care providers through patient satisfaction and know the quality of service delivered. Based on the findings of the assessment, quality improvement can be done on the service delivered.[12–19]

Ethiopia's healthcare system consists of a network of primary healthcare units, district hospitals, and specialized referral hospitals. The distribution of healthcare facilities is aimed at providing access to essential services across the country, including rural areas.[20] Despite efforts to improve healthcare, Ethiopia faces challenges such as inadequate healthcare infrastructure, shortages of healthcare professionals, limited access to essential medicines, and disparities in healthcare provision between urban and rural areas.[21] Healthcare in Ethiopia is financed through a mix of government funding, external aid, community-based health insurance schemes, and out-of-pocket payments. The government has been working to expand health insurance coverage to improve healthcare affordability for its citizens.[22] While significant progress has been made, Ethiopia continues to face challenges related to healthcare quality, equitable access, and the burden of non-communicable diseases.

Pharmacy service is one part of the hospital health care system and it delivers drug-related health care for patients. Among the components of a hospital pharmacy, the outpatient is the one that addresses a lot of patients giving patient-oriented drug-related services[15,23] Patients who are satisfied with pharmaceutical services are more likely to take medications properly and have drug adherence. So, delivering quality pharmaceutical service can enhance the satisfaction of patients and obtain the expected treatment outcome.[21,24,25]

A data-driven suite of interventions called Auditable Pharmaceutical transaction services (APTSs) is intended to monitor pharmaceutical transaction data, thereby enhancing transaction transparency, measurability, and accountability.[26] It improved patients' and professionals' satisfactions. It facilitates the effective use of the budget by creating accountable and transparent transactions and producing accurate data. Additionally, by using fresh workspace arrangements and artistic elements that raise employee and client pleasure, it revitalizes efficient workforce growth and deployment.[24]

For the assurance of quality health care service, the Ethiopian federal ministry of health has been implementing different reforms. Among the reforms, Ethiopian hospital reform is one. Chapter four of this reform focuses on hospital pharmacy service.[24] Upon implementing this reform, Pharmacy staff of Deberemarkose hospital have got a systemized hospital pharmacy service delivery approach which is a clear and transparent so-called APTS.[10] Felege Hiwot comprehensive specialized hospital has been implementing the reform and the auditable system as well. So, this research assesses patient knowledge and satisfaction obtained from pharmacy professionals implementing the reform.

When we see the healthcare delivery system of Ethiopia, it is limited and poor in quality. It can be expressed in terms of poor access to quality medicine, unaffordable cost of drugs, poor education, and lack of access to skilled health professionals.[27] Based on the finding of the Federal ministry of health food and drug administration authority, most of the dispensing of drugs are with incorrect dosage, wrong duration, poor labeling, lack of patient counseling, wrong drug information, poor patients' understanding and knowledge of their drug dosage, and unavailability of key/essential drugs.[23,24]

Patients' inadequate knowledge of medication use results in overuse, patient noncompliance with a drug regimen, a decrease in its efficacy of therapy, and unexpected economic consequences that hamper the success of the health care system as a whole.[8–31]

Most of the time patients get pharmacy service at the last stage of health care, so patients become exhausted to grasp the information delivered by pharmacy professionals. Such patients need to get a brief explanation about medication utilization; otherwise, patients become unsatisfied.[25,32–36] Patients dissatisfied by the service in health facilities will encounter psychological and social problems in their day-to-day activities.[25,36] Patients who have high satisfaction with outpatient pharmacy service have good medication-related outcomes and reduced medication-related problems and their downstream outcomes.[37,38] Previous studies conducted in Ethiopia showed that around 50% of the clients at Addis Abeba,[8] 47% of yekatite 12,[39] and 56% southern Ethiopia[40] were satisfied with the pharmacy service.

Determining the knowledge of patients on dispensed drug and their satisfaction level enable pharmacy professionals to identify the gap in the dispensing and counseling procedures and improve the gaps. To the best of our knowledge of the literature done on hospital pharmacy services, it is a new concept of relating patient satisfaction with their knowledge about the dispensed drug and drug-related counseling service. Therefore, this study aimed to assess patient knowledge and satisfaction and associated factors with outpatient pharmacy service at Felege Hiwot comprehensive specialized hospital.

## Patients and methods

### Study design, setting, and period

An institution-based cross-sectional study was conducted. This study was conducted in Felege Hiwot comprehensive specialized hospital which is located in Bahir Dar city, Ethiopia. Felege Hiwot comprehensive specialized hospital is one of the earliest known governmental hospitals in the region established with the German State government during the regime of Emperor H/Selassie in April 1955 E.C. During that time, it was planned to serve about 25,000 of the population. Presently, about 5–7 million people have been getting the service. The hospital is providing comprehensive services which are under the management of the Amhara Regional health bureau. It has around 1623 staff. Among these 885 are health professionals and the rest 738 are supportive staff. Among 885 health professionals, currently, 714 are on the job (the following staffs are on job: 391 nurses, 40 midwifery, 49 pharmacy professionals, 64 lab professionals, 14 anesthetics, 13 ophthalmic professionals, 15 radiology professionals, and 128 doctors). The rest (171) are on long-term training. This study was focused on patients getting outpatient Pharmacy service from 01 March 2022 to 30 May 2022.

### Study participants and eligibility criteria

The source population were all patients who get outpatient pharmacy services during the data collection period in the hospital. Selected clients who fulfilled inclusion criteria and get outpatient pharmacy service during data collection were the study population. Patients who received outpatient pharmacy service in the hospitals during the study period with an age greater than or equal to eighteen were included, whereas, any patient less than 18 years old and patients who were not physically and mentally capable of being interviewed at the time of data collection were excluded.

### Sample size determination and sampling techniques

The sample size is determined by using a single population proportion formula:

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

Where $n$ is the sample size required; $d$, marginal error of 5% ($d=0.05$); $z$ is the degree of accuracy required at 95% confidence level$=1.96$; and $p=0.744$ ($p=$level of satisfaction).

The level of patient satisfaction has been taken from a previously done study with systems improved Access to pharmaceutical services funded by United states agency for international development (USAID) in 2016 at Debra Marko's hospital. Using the mentioned formula, the sample size can be calculated as follows:

$$n = \frac{1.96^2 0.744(1-0.744)}{0.05^2} = 293$$

After adding 10% of the calculated sample size for possible non-response, the final sample size becomes $30 + 293 = 323$. Study participants were selected by simple random sampling method.

### Operational definition

*Clients*: are individuals who are patients who get outpatient pharmacy service.

*Labeling*: is the labeling of the name of the drug, unit dose, frequency of administration and volume (total quantity) and duration of treatment on dispensed medicine envelop/packages.[41]

*Good knowledge*: a patient was assumed to have good exit knowledge about the medication(s) dispensed when he/she addressed five of the eight necessary knowledge-related questions.[42]

*Poor knowledge*: a patient was assumed to have poor exit knowledge about the medication(s) dispensed when he/she addressed less than five of the eight necessary knowledge-related questions.[42]

*Satisfied patients*: patients are said to be satisfied if they choose three and above on the Likert scale of satisfaction.[43]

*Unsatisfied patients*: patients that choose 1 and 2 on the Likert scale.[43]

### Data collection instruments and procedures

An interviewer-administered structured questionnaire was adapted for data collection after reviewing relevant studies.[4,6,8,39] The instrument contained four sections; one section focuses on the socio-demographic profile of respondents including 11 questions. Pharmacy setting, service given by the pharmacy profession, and patient knowledge about a drug has 6, 17, and 8 questions respectively. A question for pharmacy setting and service given by the pharmacy professional contains five-point Likert scale items. On the scale, "1" stood for a rating of the item as "Strongly dissatisfied" while "2," "3," "4," and "5" stood for "Dissatisfied," "Satisfied," "Moderately satisfied" and "Strongly satisfied" in that order. Patient knowledge assessment questions were also five-point Likert scale items. On the scale, "1" stood for a rating of the item as "Very low" while "2," "3," "4," and "5" stood for "Low," "Moderate," "High" and "Very high" in that order.[44,45]

### Data quality assurance

After the development of the questionnaire, before data collection, the contents of the questionnaire were reviewed

by groups of experienced pharmacy professionals and contextualized. The questionnaire for the patient exit interview which was prepared in English was translated into Amharic and back to English by legal personnel to improve the consistency of the tool. To keep the quality of the data, training was given to the interviewers, who are pharmacy technicians and they were supervised during data collection. Pretesting of the questionnaire was done in 5% selected at Tibebe Ghion specialized hospital. A daily review of collected questionnaires for completeness, accuracy, clarity, and consistency of data was carried out by the principal investigator. Reliability assessment was computed for the satisfaction and knowledge responses to ascertain the internal consistency of the questionnaires using Cronbach's alpha, which yielded 0.79 and 0.83 respectively.

### Data management and statistical analysis

Data were collected, cleared, and coded then entered into EPI Info (Epidemiological information. version 7.1.5.2; https://www.cdc.gov/epiinfo/index.html) and analyzed using SPSS (version 25; IBM Corp. Released 2017. IBM SPSS Statistics for Windows, Version 25.0. Armonk, NY, IBM Corp.). Descriptive statistics, cross-tabs, and binary logistic regressions were utilized. Descriptive statistics such as frequency, percentage, and mean were computed. And it was used to analyze participant characteristics. A binary logistics regression was used to determine factors associated with service satisfaction. The association was tested using the odds ratio and $p$-value. Those variables with $p < 0.2$ in the univariate analysis were included in the multivariate analysis. The final association was declared using the adjusted odds ratio and $p < 0.05$.

### Patient and public involvement

No patients nor the public were involved in the design, analysis and interpretation of this study and will not be involved in the dissemination of the results.

## Result

### Socio-demographic characteristics of respondents

From the total of 323 questionnaires, 318 of the respondents gave complete responses making the response rate 318 (98.45 %). Based on the finding 213 (67%) were male and 194 (61%) of the respondents were married. When we see their educational status 123 (38.7%) had no formal education and most of the respondents 290 (91.2%) were Orthodox Christian. On the other hand, 110 (34.6%) were farmers and 304 (95.6 %) were Amhara. A considerable number of the participants 118 (37.1%) were in the age group of 18–30 years, while 111 (47.7%) of them earned 346–2000 ETB a month. Regarding service modality, majority of the respondents, 153 (48.1%) are utilizers of health insurance (Table 1).

### Drug-related knowledge of respondents

The results of this study revealed that most of the respondents had good knowledge about the dose of the drug, route of administration, and duration of treatment with corresponding numbers of 266 (83.6%), 275 (86.5%), and 226 (71.1%) respectively, whereas 256 (80.5%) of the respondents had poor knowledge about the name of the drug they obtained from the outpatient pharmacy. The results are presented below (Table 2).

### Drug-related cross-tabulation knowledge result

The following table shows the drug-related knowledge of respondents concerning their sociodemographic status (Table 3).

### Overall knowledge result

The overall knowledge result of the respondents as we see on the pie chart presented below was only 13.3% of individuals having good drug knowledge (Figure 1).

### Satisfaction of respondents with pharmacy service

Most of the participants were dissatisfied with the waiting time 129 (40.6%), consultation time 120 (37.7%) and dispensing time 120 (37.7%) of the outpatient pharmacy. Pharmacy service that strongly satisfied respondents were Pharmacy professional availability 174 (54.7%), language used by the pharmacy professional 118 (37.1%), and those that obtained the service with dignity and respect were 119 (37.4%). On the other hand, respondents were strongly dissatisfied with services like telling drug names 202 (63.5%), understanding side effects 196 (61.6%), talking about storage condition 144 (45.3%), and receiving feedback 144 (45.3%) (Table 4).

### Satisfactions cross-tabulation

The following table shows the satisfaction of respondents with respect to their sociodemographic status (Table 5).

### Satisfaction of respondents on labeling

As it is indicated in the table, respondents were strongly satisfied with the label for Dose (122 (38.4%)), route 137 (43.1%), frequency 140 (44.0%), and duration 119 (37.4%). But they were strongly dissatisfied with the label of the name of the drug 154 (48.4%) (Table 6).

### Overall satisfaction result

The overall satisfaction result of the respondents as we see on the pie chart presented below indicates that 72.01% of

**Table 1.** Socio-demographic characteristics of respondents (*n* = 318).

| No | Variables | Category | Frequency | Percent |
|----|-----------|----------|-----------|---------|
| 1 | Sex | Male | 213 | 67 |
| | | Female | 105 | 33.0 |
| 2 | Age | 18–29 | 118 | 37.1 |
| | | 30–39 | 72 | 22.6 |
| | | 40–49 | 58 | 18.2 |
| | | 50–59 | 30 | 9.4 |
| | | 60–69 | 31 | 9.7 |
| | | ≥70 | 9 | 2.8 |
| 3 | Marital status | Single | 103 | 32.4 |
| | | Married | 194 | 61.0 |
| | | Divorced | 13 | 4.1 |
| | | Widowed | 7 | 2.2 |
| | | Others | 1 | 1 |
| 4 | Educational status | No formal education | 123 | 38.7 |
| | | Primary | 72 | 22.6 |
| | | Secondary | 61 | 19.2 |
| | | College and above | 62 | 19.5 |
| 5 | Religion | Orthodox Christian | 290 | 91.2 |
| | | Protestant | 9 | 2.8 |
| | | Muslim | 19 | 6.0 |
| 6. | Ethnicity | Amhara | 304 | 95.6 |
| | | Agew | 12 | 3.8 |
| 7 | Occupation | Government employee | 51 | 16.0 |
| | | Private employee | 25 | 7.9 |
| | | Housewife | 38 | 11.9 |
| | | Merchant | 34 | 10.7 |
| | | Farmer | 110 | 34.6 |
| | | Others | 60 | 18.9 |
| 8 | Average monthly income | ≤345 | 79 | 24.8 |
| | | 346–2000 | 111 | 34.9 |
| | | 2001–4000 | 58 | 18.2 |
| | | >4000 | 70 | 22.0 |
| 9 | Place of residence | Urban | 169 | 53.1 |
| | | Rural | 149 | 46.9 |
| 10 | Service modality | Free | 28 | 8.8 |
| | | Credit | 17 | 5.3 |
| | | Cash | 120 | 37.7 |
| | | Health insurance | 153 | 48.1 |
| 11 | Type of visit | New | 169 | 53.1 |
| | | Repeat | 149 | 46.9 |

respondents were satisfied with the outpatient pharmacy service (Figure 2).

## Factors associated with knowledge of the clients

To determine the factors associated with the knowledge of patients on dispensed drugs, regression analyses were made. The unavailable regression analyses showed positive correlations between the knowledge of patients for dispensed drugs and many different variables (Table 7). Educational status, Service modality, Occupation, Labeling, and Dispensing time had an association. But upon multivariate analysis, patients of service modality by credit (Adjusted odds ratio (AOR): 5.50 (1.71–17.74), who are with the occupation of merchants (AOR: 0.09 (0.01–0.83)) and labeling (AOR: 3.13 (1.58–6.20)) had an association with medication knowledge. So according to the results of multivariate analysis, respondents that used credit service are 5.50 times more likely to have exit drug knowledge compared with health insurance users. On the other hand, merchants are 0.09 times less likely to exit interview knowledge compare to governmental employers. And those respondents who are

**Table 2.** Drug-related knowledge of respondents (*n* = 318).

| No | Variables | Category | Frequency | Percent |
|---|---|---|---|---|
| 1 | Drug INN | Poor | **256** | **80.5** |
| | | Good | 62 | 19.5 |
| 2 | Drug Dose | Poor | 52 | 16.4 |
| | | Good | **266** | **83.6** |
| 3 | Drug route | Poor | 43 | 13.5 |
| | | Good | **275** | **86.5** |
| 4 | Drug frequency | Poor | 48 | 15.1 |
| | | Good | **270** | **84.9** |
| 5 | Drug duration | Poor | 92 | 28.9 |
| | | Good | **226** | **71.1** |
| 6 | Drug storage | Poor | 166 | 52.2 |
| | | Good | 152 | 47.8 |
| 7 | Drug precaution | Poor | 158 | 49.7 |
| | | Good | 160 | 50.3 |
| 8 | Drug interaction | Poor | 162 | 50.9 |
| | | Good | 156 | 49.1 |

INN: international nonproprietary names.
The bold indicated the highest value.

satisfied with drug labeling are 3.18 times more likely to have exit knowledge compared to the ones who are not satisfied (Table 7).

## Factors associated with satisfaction of the patients with outpatient pharmacy service

To determine the factors associated with the satisfaction of patients for outpatient pharmacy service, regression analyses were made. The unavailable regression analyses showed positive correlations between patient satisfaction and several different variables shown in Table 8. Multivariate analysis showed that waiting time, dispensing time, and privacy had an association with satisfaction. So according to the result of multivariate analysis, respondents with 3–6 min, 6.1–9 min, and >9 min waiting times are 0.06 times, 0.02 times, and 0.01 less likely to be satisfied compared with respondents having waiting time <3 min. Patients that got dispensing service within 2.1–3 min are 2.38 times more satisfied than those getting the service in ≤2 min. And patients that got dispensing services with privacy are 13.11 times more satisfied than those getting services without ensuring the privacy of patients (Table 8).

## Discussion

Assessing patients' satisfaction with pharmacy services is essential to improving the quality of current services. This will help to bridge the gap between what patients require and what they actually receive.[2] Pharmacist behavior is tailored to the specific health concerns and treatment needs of the patients. The interactions with patients who have infectious diseases often prioritize infection control and the effective

use of antimicrobial medications, while interactions with patients managing chronic non-communicable diseases often focus on long-term disease management, adherence to maintenance therapy, and lifestyle modifications. By understanding the unique needs of patients with different health conditions, pharmacists can provide personalized support and interventions to optimize patient outcomes and ensure the safe and effective use of medications.

This study was aimed to assesses the knowledge and satisfaction of clients with outpatient pharmacy service to obtain an insight into the quality of the healthcare service provided at Felege Hiwot comprehensive specialized hospital. Since the knowledge of patients about their dispensed drug can be affected by different factors, this research tried to address most of the factors and determine their association. The overall knowledge of the clients about the drug is 13.3% which is slightly lower than a study done in Gambia where the overall knowledge of the participants was 16.1%.[45] The difference might be due to different sociodemographic characteristics of the respondents. Most of the respondents have good knowledge about the dose of the drug, route of administration, and duration of treatment with numbers at 266 (83.6%), 275 (86.5%), and 226 (71.1%), respectively. However, most of the respondents 256 (80.5%) had poor knowledge about the name of the drug they obtain from the outpatient pharmacy. This result is similar with a study conducted in Federal Harar Police Hospital which revealed that 82.5% of patients have knowledge of the route but only 37.2% know the name of the drug.[42] However, the findings of this study was higher than in another study done in rural Gambela hospital exit interview where knowledge assessment result showed that 60.4% and 5.4% of patients know the drug dose and duration, respectively. Also, the

**Table 3.** Cross-tabulated knowledge result (*n* = 318).

| No | Variables | Category | Knowledge of the respondents | | Total |
|---|---|---|---|---|---|
| | | | Poor knowledge, N (%) | Good knowledge N (%) | N (%) |
| 1 | Sex | Male | 174 (66.2) | 39 (70.9) | 213 (67.0) |
| | | Female | 89 (33.8) | 16 (29.1) | 105 (33.0) |
| 2 | Age | 18–29 | 97 (36.9) | 21 (38.2) | 118 (37.1) |
| | | 30–39 | 60 (22.8) | 12 (21.8) | 72 (22.6) |
| | | 40–49 | 47 (17.9) | 11 (20.0) | 58 (18.2) |
| | | 50–59 | 22 (8.4) | 8 (14.5) | 30 (9.4) |
| | | 60–69 | 29 (11.0) | 2 (3.6) | 31 (9.7) |
| | | ⩾70 | 8 (3.0) | 1 (1.8) | 9 (2.8) |
| 3 | Marital status | Single | 88 (33.5) | 15 (27.3) | 103 (32.4) |
| | | Married | 158 (60.1) | 36 (65.5) | 194 (61.0) |
| | | Divorced | 10 (3.8) | 3 (5.5) | 13 (4.1) |
| | | Widowed | 6 (2.3) | 1 (1.8) | 7 (2.2) |
| | | Others | 1 (0.4) | 0 (0) | 1 (0.3) |
| 4 | Educational status | No formal education | 104 (39.5) | 19 (34.5) | 123 (38.7) |
| | | Primary | 67 (25.5) | 5 (9.1) | 72 (22.6) |
| | | Secondary | 50 (19.0) | 11 (20.0) | 61 (19.2) |
| | | College and above | 42 (16.0) | 20 (36.4) | 62 (19.5) |
| 5 | Religion | Orthodox Christian | 239 (90.9) | 51 (92.7) | 290 (91.2) |
| | | Protestant | 8 (3.0) | 1 (1.8) | 9 (2.8) |
| | | Muslim | 16 (6.1) | 3 (5.5) | 19 (6.0) |
| 6 | Ethnicity | Amhara | 253 (96.2) | 51 (92.7) | 304 (95.6) |
| | | Agew | 10 (3.8) | 4 (7.3) | 14 (4.4) |
| 7 | Occupation | Government employee | 37 (14.1) | 14 (25.5) | 51 (16.0) |
| | | Private employee | 19 (7.2) | 6 (10.9) | 25 (7.9) |
| | | Housewife | 33 (12.5) | 5 (9.1) | 38 (11.9) |
| | | Merchant | 32 (12.2) | 2 (3.6) | 34 (10.7) |
| | | Farmer | 95 (36.1) | 15 (27.3) | 110 (34.6) |
| | | Others | 47 (17.9) | 13 (23.6) | 60 (18.9) |
| 8 | Average monthly income | ⩽345 | 64 (24.3) | 15 (27.3) | 79 (24.8) |
| | | 346–2000 | 92 (35.0) | 19 (34.5) | 111 (34.9) |
| | | 2001–4000 | 49 (18.6) | 9 (16.4) | 58 (18.2) |
| | | >4000 | 58 (22.1) | 12 (21.8) | 70 (22.0) |
| 9 | Place of residence | Urban | 134 (51.0) | 35 (63.6) | 169 (53.1) |
| | | Rural | 129 (49.0) | 20 (36.4) | 149 (46.9) |
| 10 | Service modality | Free | 25 (9.5) | 3 (5.5) | 28 (8.8) |
| | | Credit | 8 (3.0) | 9 (16.4) | 17 (5.3) |
| | | Cash | 97 (36.9) | 23 (41.8) | 120 (37.7) |
| | | Health insurance | 133 (50.6) | 20 (36.4) | 153 (48.1) |
| 11 | Type of visit | New | 141 (53.6) | 28 (50.9) | 169 (53.1) |
| | | Repeat | 122 (46.4) | 27 (49.1) | 149 (46.9) |

result of this study was lower than a research conducted at Jimma university specialized hospital which showed that 100.0%, 96.1%, 49.6%, and 15.1% of patients recalled the route, dose, duration, and name of their drug dispensed, respectively.[41]

The multivariate analysis indicated that statistically significant exit knowledge of dispensed drugs was observed in patients getting service by credit than those who obtain service by health insurance. This is because those individuals getting service through credit are going to pay the money back so that they have the intention of addressing all important things associated with the service as compared to health insurance holders who have invested much less for the service. Satisfied patients with the labeling of drug information are more knowledgeable than those who are not satisfied by the labeling. This is due to the reason that if they are interested in the labeling, they read it immediately to grasp the information; in addition, pharmacy professionals provide a lot of information to patients on written labels.
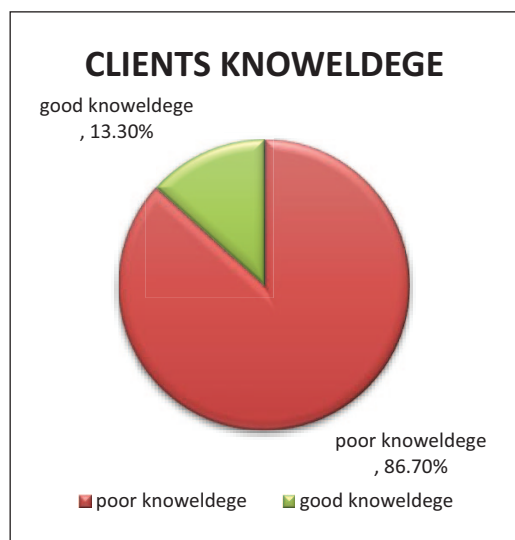
**Figure 1.** Overall knowledge result of respondents at FHCSH, BahirDar, Ethiopia from 01 March 2022 to 30 May 2022 ($n = 318$).

The findings of this study revealed that the overall satisfaction level of the patients with the outpatient pharmacy service was 72.1 %. This result is higher than the satisfaction results at Tiur anbesa,[8] Yekatit 12[39] which were 51.6% and 47%, respectively. But it is lower than the nationwide study of satisfaction result of 74.5%.[46,47] The reason for the discrepancy might be in the way how satisfaction is measured. As satisfaction is subjective, it is mandatory to use standard measures. As much as possible of this study tried to focus on the dispensing process toward patient care similar to a nationwide study.

After univariate analysis, seven variables, Age, occupation, service modality, consultation time, waiting time, dispensing time, and privacy was a candidate for bivariate analysis. After the multivariate analysis, privacy, waiting time, and dispensing time had an association with patient satisfaction.

When we consider waiting time, respondents with 3–6 min, 6.1–9 min, and >9 min waiting times are 0.06 times, 0.02 times, and 0.01 less likely satisfied compared with respondents having waiting time <3 min. It shows that as the patient stays without getting serviced for a longer time, satisfaction accordingly decreases.

When we focus on dispensing time; it is the time in which the pharmacy professional aligns drugs and gives them to the patient with appropriate counseling within an appropriate time. The result of this study revealed that patients that got dispensing service within 2.1–3 min are 2.38 times more satisfied than those getting the service in ≤2 min. It shows that dispensing requires expenditure of time more than 2 min because it also involves consultation time.

In this study, privacy for pharmacy service had an association with pharmacy service satisfaction. Patients that got dispensing services with privacy are 13.11 times more satisfied than those getting services without privacy. To facilitate the dispensing procedure, health professionals should maintain the privacy of health-related information that is going to be delivered to the patient. The limitation of this study was patients who answered at least five out of eight questions on the knowledge assessment were considered knowledgeable about the dispensed drugs, and this might have also resulted in an underestimation of the knowledge status.

These findings can serve as a valuable guide for shaping pharmacists' behaviors to better meet patient needs and enhance overall healthcare experiences in Africa. Here are some potential changes we might see in pharmacists' behavior in Africa following our findings:

➢ Pharmacists may aim to minimize waiting times by optimizing workflow, adopting efficient dispensing processes, and streamlining administrative tasks to ensure that patients are served promptly upon arrival. This may involve prioritizing prescription processing, reducing unnecessary delays, and improving overall operational efficiency.

➢ Pharmacists could place a greater emphasis on effective communication, ensuring that patients are kept informed about potential waiting times and that their concerns are acknowledged. Engaging with patients during dispensing to provide clear, personalized medication counseling and information on dosage, side effects, and adherence could become more of a priority.

➢ Pharmacists may re-evaluate the layout and design of the pharmacy to enhance privacy for patient consultations, medication counseling, and sensitive discussions about health concerns. This could involve creating private counseling areas or ensuring that conversations are conducted discreetly to respect patient confidentiality.

➢ Pharmacists might increasingly adopt a patient-centered care approach, aiming to better understand individual patient needs, preferences, and expectations. This can lead to tailoring services to match the unique requirements of each patient, promoting a more personalized and empathetic approach to care delivery.

➢ Our findings insights may also prompt pharmacists to actively seek and utilize patient feedback to continually assess and improve patient satisfaction. Implementing mechanisms to gather real-time feedback, conducting periodic patient satisfaction surveys, and embracing a culture of continuous improvement based on patient input could become standard practice.

**Table 4.** Satisfaction of respondents with pharmacy service (n = 318).

| Variable | Level of satisfaction related to pharmacy services | | | | |
|---|---|---|---|---|---|
| | Strongly dissatisfied | Dissatisfied (%) | Satisfied (%) | Moderately satisfied (%) | Strongly satisfied (%) |
| | N (%) | N (%) | N (%) | N (%) | N (%) |
| The location of the pharmacy | 11 (3.5) | 12 (3.8) | 103 (32.4) | 73 (23.0) | **119 (37.4)** |
| Ventilation and window arrangement | 8 (2.5) | 24 (7.5) | 82 (25.8) | 86 (27.0) | **118 (37.1)** |
| Waiting chair | 26 (8.2) | 65 (20.4) | 93 (29.2) | 60 (18.9) | 74 (23.3) |
| Pharmacy area cleanliness | 10 (3.1) | 58 (18.2) | 69 (21.7) | 70 (22.0) | **111 (34.9)** |
| Waiting time | 49 (15.4) | **129 (40.6)** | 76 (23.9) | 34 (10.7) | 30 (9.4) |
| Dispensing time | 47 (14.8) | **120 (37.7)** | 79 (24.8) | 36 (11.3) | 36 (11.3) |
| Consultation time | 3 (0.9) | **120 (37.7)** | 110 (34.6) | 27 (8.5) | 14 (4.4) |
| Pharmacy professional availability | 13 (4.1) | 12 (3.8) | 51 (16.0) | 68 (21.4) | **174 (54.7)** |
| Pharmacy professionals ask about drug and health-related history | **147 (46.2)** | 82 (25.8) | 42 (13.2) | 24 (7.5) | 23 (7.2) |
| Language used | 27 (8.5) | 52 (16.4) | 65 (20.4) | 56 (17.6) | **118 (37.1)** |
| Tell the drug INN | **202 (63.5)** | 71 (22.3) | 16 (5.0) | 11 (3.5) | 18 (5.7) |
| Tell the dose | 15 (4.7) | 22 (6.9) | 70 (22.0) | 47 (14.8) | **164 (51.6)** |
| Tell the route | 8 (2.5) | 17 (5.3) | 81 (25.5) | 50 (15.7) | **162 (50.9)** |
| Tell frequency | 9 (2.8) | 18 (5.7) | 71 (22.3) | 57 (17.9) | **163 (51.3)** |
| Tell duration | 38 (11.9) | 38 (11.9) | 66 (20.8) | 39 (12.3) | 137 (43.1) |
| Mention side effect | **196 (61.6)** | 66 (20.8) | 22 (6.9) | 15 (4.7) | 19 (6.0) |
| What to do to minimize side effects | **221 (69.5)** | 64 (20.1) | 18 (5.7) | 8 (2.5) | 7 (2.2) |
| Drug–drug interaction | 94 (29.6) | 72 (22.6) | 50 (15.7) | 42 (13.2) | 60 (18.9) |
| Dignity and respect | 21 (6.6) | 44 (13.8) | 71 (22.3) | 63 (19.8) | **119 (37.4)** |
| Keep privacy | 31 (9.7) | 44 (13.8) | 94 (29.6) | 57 (17.9) | 92 (28.9) |
| Packaging | **114 (35.8)** | 62 (19.5) | 48 (15.1) | 38 (11.9) | 56 (17.6) |
| Information about storage | **132 (41.5)** | 87 (27.4) | 49 (15.4) | 25 (7.9) | 25 (7.9) |
| Availability of drug | 41 (12.9) | 63 (19.8) | 67 (21.1) | 49 (15.4) | 98 (30.8) |
| Adequacy of drug-related information | **103 (32.4)** | 85 (26.7) | 59 (18.6) | 35 (11.0) | 36 (11.3) |
| Receive feedback | **144 (45.3)** | 85 (26.7) | 45 (14.2) | 24 (7.5) | 20 (6.3) |
| The interest of patients for the service | 37 (11.6) | 65 (20.4) | **109 (34.3)** | 48 (15.1) | 59 (18.6) |

INN: international nonproprietary names.
The bold value indicated that the highest value.

**Table 5.** Cross-tabulated satisfaction result of the respondents, (n = 318).

| No | Variables | Category | Satisfaction of the respondents | | Total |
|---|---|---|---|---|---|
| | | | Unsatisfactory N (%) | Satisfactory, N (%) | N (%) |
| 1 | Sex | Male | 64 (71.9) | 149 (65.1) | 213 (67.0) |
| | | Female | 25 (28.1) | 80 (34.9) | 105 (33.0) |
| 2 | Age | 18–29 | 37 (41.6) | 81 (35.4) | 118 (37.1) |
| | | 30–39 | 20 (22.5) | 52 (22.7) | 72 (22.6) |
| | | 40–49 | 12 (13.5) | 46 (20.1) | 58 (18.2) |
| | | 50–59 | 8 (9.0) | 22 (9.6) | 30 (9.4) |
| | | 60–69 | 8 (9.0) | 23 (10.0) | 31 (9.7) |
| | | ⩾70 | 4 (4.5) | 5 (2.2) | 9 (2.8) |
| 3 | Marital status | Single | 34 (38.2) | 69 (30.1) | 103 (32.4) |
| | | Married | 52 (58.4) | 142 (62.0) | 194 (61.0) |
| | | Divorced | 2 (2.2) | 11 (4.8) | 13 (4.1) |
| | | Widowed | 1 (1.1) | 6 (2.6) | 7 (2.2) |
| | | Others | 0 (0.0) | 1 (0.4) | 1 (0.3) |
| 4 | Educational status | No formal education | 31 (34.8) | 92 (40.2) | 123 (38.7) |
| | | Primary | 23 (25.8) | 49 (21.4) | 72 (22.6) |
| | | Secondary | 18 (20.2) | 43 (18.8) | 61 (19.2) |
| | | College and above | 17 (19.1) | 45 (19.7) | 62 (19.5) |
| 5 | Religion | Orthodox Christian | 84 (94.4) | 206 (90.0) | 290 (91.2) |
| | | Protestant | 1 (1.1) | 8 (3.5) | 9 (2.8) |
| | | Muslim | 4 (4.5) | 15 (6.6) | 19 (6.0) |
| 6 | Ethnicity | Amhara | 86 (96.6) | 218 (95.2) | 304 (95.6) |
| | | Agew | 3 (3.4) | 11 (4.8) | 14 (4.4) |
| 7 | Occupation | Government employee | 10 (11.2) | 41 (17.9) | 51 (16.0) |
| | | Private employee | 12 (13.5) | 13 (5.7) | 25 (7.9) |
| | | Housewife | 9 (10.1) | 29 (12.7) | 38 (11.9) |
| | | Merchant | 12 (13.5) | 22 (9.6) | 34 (10.7) |
| | | Farmer | 30 (33.7) | 80 (34.9) | 110 (34.6) |
| | | Others | 16 (18.0) | 44 (19.2) | 60 (18.9) |
| 8 | Average monthly income | ⩽345 | 22 (24.7) | 57 (24.9) | 79 (24.8) |
| | | 346–2000 | 32 (36.0) | 79 (34.5) | 111 (34.9) |
| | | 2001–4000 | 19 (21.3) | 39 (17.0) | 58 (18.2) |
| | | >4000 | 16 (18.0) | 54 (23.6) | 70 (22.0) |
| 9 | Place of residence | Urban | 49 (55.1) | 120 (52.4) | 169 (53.1) |
| | | Rural | 40 (44.9) | 109 (47.6) | 149 (46.9) |
| 10 | Service modality | Free | 5 (5.6) | 23 (10.0) | 28 (8.8) |
| | | Credit | 6 (6.7) | 11 (4.8) | 17 (5.3) |
| | | Cash | 39 (43.8) | 81 (35.4) | 120 (37.7) |
| | | Health insurance | 39 (43.8) | 114 (49.8) | 153 (48.1) |
| 11 | Type of visit | New | 48 (53.9) | 121 (52.8) | 169 (53.1) |
| | | Repeat | 41 (46.1) | 108 (47.2) | 149 (46.9) |

**Table 6.** Respondents' satisfaction with drug labeling, (n = 318).

| Variable | Level of satisfaction with Labeling | | | | |
|---|---|---|---|---|---|
| | Strongly dissatisfied | Dissatisfied | Satisfied | Moderately satisfied | Strongly satisfied |
| | No (%) | No (%) | No (%) | No (%) | No (%) |
| INN name of the drug | **154 (48.4)** | 66 (20.8) | 36 (11.3) | 23 (7.2) | 39 (12.3) |
| Dose | 42 (13.2) | 51 (16.0) | 60 (18.9) | 43 (13.5) | **122 (38.4)** |
| Route | 37 (11.6) | 42 (13.2) | 65 (20.4) | 37 (11.6) | **137 (43.1)** |
| Frequency | 37 (11.6) | 39 (12.3) | 63 (19.8) | 39 (12.3) | **140 (44.0)** |
| Duration | 56 (17.6) | 56 (17.6) | 59 (18.6) | 28 (8.8) | **119 (37.4)** |

INN: international nonproprietary names.
The bold value indicated the highest value.
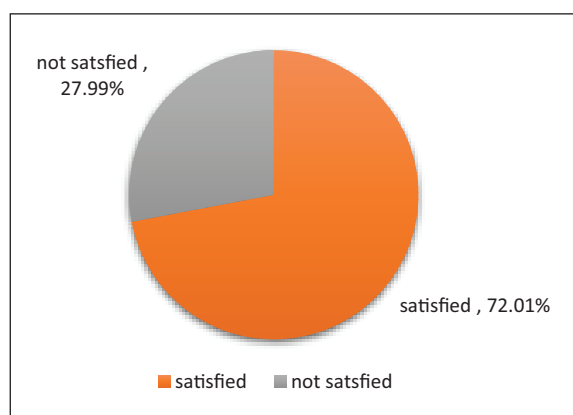
**Figure 2.** Overall satisfaction result of respondents at FHCSH, BahirDar Ethiopia, 01 March 2022 to 30 May 2022 ($n = 318$).

By implementing these changes, pharmacists across Africa could improve patient satisfaction, foster better health outcomes, and contribute to a more positive and patient-centric healthcare environment. Our findings have the potential to influence pharmacist behaviors and practices, promoting a more patient-centered approach to care delivery that respects patient time, privacy, and individual needs. These changes could ultimately benefit patients and contribute to the overall improvement of healthcare services across Africa.

Some of the key limitations of the study were the following. Since the study was conducted in a single-centered unit, it will limit generalizability of the result; in addition, the design of the questionnaire used for this study contained closed-ended questions, which may lead to biases. Besides, the use of odds ratio in such a cross-sectional study may overestimate the outcome. Furthermore, the findings of this study might be subjected to social desirability bias because the interview was done on hospital premises.

## Conclusion

The present study found that less than a quarter of the patients met the defined criteria for adequate exit knowledge and various factors related to patient and pharmacy professionals. The

**Table 7.** Factors associated with exit knowledge of patients.

| S. No | Variables | Category | Patients' knowledge on their drug(s) | | Odds ratio (95% CI) | | p-Value |
|---|---|---|---|---|---|---|---|
| | | | Poor | Good | COR | AOR | |
| 1 | Educational status | No formal education | 104 | 19 | 0.38 (0.19–0.79) | 0.58 (0.11–3.18) | 0.53 |
| | | Primary | 64 | 05 | 0.16 (0.06–0.45) | 0.32 (0.05–1.91) | 0.21 |
| | | Secondary | 50 | 11 | 0.42 (0.20–1.07) | 0.53 (0.10–2.72) | 0.44 |
| | | College and above | 42 | 20 | 1 | | |
| 2 | Service modality | Free | 25 | 3 | 0.80 (0.22–2.89) | 0.63 (0.13–2.99) | 0.57 |
| | | Credit | 8 | 9 | 7.48 (2.59–21.64) | 5.50 (1.71–17.74) | **0.004** |
| | | Cash | 97 | 23 | 1.58 (0.82–3.03) | 1.43 (0.69–2.97) | 0.34 |
| | | Health insurance | 133 | 20 | 1 | | |
| 3 | Occupation | Government employee | 37 | 14 | 1 | | |
| | | Private employee | 19 | 06 | 0.84 (0.28–2.52) | 1.04 (0.25–4.28) | 0.96 |
| | | Housewife | 33 | 05 | 0.40 (0.13–1.23) | 0.78 (0.21–2.88) | 0.71 |
| | | Merchant | 32 | 02 | 0.17 (0.04–0.78) | 0.09 (0.01–0.83) | **0.03** |
| | | Farmer | 95 | 15 | 0.42 (0.18–0.95) | 0.41 (0.13–1.31) | 0.13 |
| | | Others | 47 | 13 | 0.73 (0.31–1.74) | 0.70 (0.21–2.33) | 0.56 |
| 4. | Age | 18–29 | 97 | 21 | 1 | | |
| | | 30–39 | 60 | 12 | 0.92 (0.42–2.01) | 0.62 (0.22–1.71) | 0.56 |
| | | 40–49 | 47 | 11 | 1.08 (0.48–2.43) | 1.25 (0.48–3.25) | 0.65 |
| | | 50–59 | 22 | 08 | 1.68 (0.66–4.29) | 3.26 (1.12–9.49) | 0.03 |
| | | 60–69 | 29 | 02 | 0.32 (0.07–1.44) | 0.60 (0.12–2.96) | 0.53 |
| | | ⩾70 | 08 | 01 | 0.58 (0.07–4.87) | 1.09 (0.11–10.19) | 0.94 |
| 5. | Labeling | Not satisfactory | 166 | 23 | 1 | | |
| | | Satisfactory | 50 | 22 | 3.18 (1.63–617) | 3.13 (1.58–6.20) | **0.001** |
| 6. | Dispensing time | ⩽2 min | 112 | 21 | 1 | 1 | |
| | | 2.1–3 min | 106 | 20 | 1.01 (0.52–1.96) | 0.85 (0.36–1.99) | 0.71 |
| | | 3.1–4 min | 34 | 11 | 1.73 (0.76–3.94) | 1.73 (0.61–4.89) | 0.30 |
| | | >4 min | 11 | 3 | 1.46 (0.37–5.66) | 0.83 (0.08–8.18) | 0.87 |

COR: crude odd ratio; AOR: adjusted odd ratio.

$p < .05$, significant. The bold value indicated that the significant value.

**Table 8.** Factors associated with satisfaction of the patients with outpatient pharmacy service (N = 318).

| S. No | Variables | Category | Patients' satisfaction | | Odds ratio (95% CI) | | p-Value |
|---|---|---|---|---|---|---|---|
| | | | Not satisfactory | satisfactory | COR | AOR | |
| 1 | Age | 18–29 | 37 | 81 | 1.75 (0.44–6.90) | 2.94 (0.47–18.52) | 0.25 |
| | | 30–39 | 20 | 52 | 2.08 (0.51–8.54) | 2.08 (0.33–13.06) | 0.43 |
| | | 40–49 | 12 | 46 | 3.07 (0.71–13.21) | 3.63 (0.56–23.30) | 0.18 |
| | | 50–59 | 8 | 22 | 2.20 (0.47–10.30) | 2.53 (0.34–18.81) | 0.37 |
| | | 60–69 | 8 | 23 | 2.30 (0.49–10.74) | 5.76 (0.80–41.71) | 0.08 |
| | | ⩾70 | 4 | 5 | 1 | | |
| 2 | Occupation | Government employee | 10 | 41 | 1 | | |
| | | Private employee | 12 | 13 | 0.26 (0.09–0.75) | 0.27 (0.07–1.04) | 0.06 |
| | | Housewife | 9 | 29 | 0.79 (0.28–2.18) | 1.12 (0.32–3.95) | 0.86 |
| | | Merchant | 12 | 22 | 0.45 (0.17–1.20) | 0.45 (0.13–1.51) | 0.20 |
| | | Farmer | 30 | 80 | 0.65 (0.29–1.46) | 0.99 (0.38–2.60) | 0.98 |
| | | Others | 16 | 44 | 0.67 (0.27–1.65) | 0.58 (0.20–1.71) | 0.32 |
| 3 | Service modality | Free | 5 | 23 | 1 | | |
| | | Credit | 6 | 11 | 0.4 (0.10–1.60) | 0.45 (0.07–2.86) | 0.40 |
| | | Cash | 39 | 81 | 0.45 (0.16–1.28) | 0.44 (0.11–1.83) | 0.26 |
| | | Health insurance | 39 | 114 | 0.64 (0.23–1.79) | 0.66 (0.15–2.86) | 0.58 |
| 4 | Consultation time | ⩽1 min | 68 | 152 | 1 | | |
| | | >1 min | 21 | 77 | 1.64 (0.94–2.87) | 1.73 (0.65–4.64) | 0.28 |
| 5 | Waiting time | <3 min | 1 | 50 | 1 | | |
| | | 3–6 min | 23 | 95 | 0.08 (0.01–0.63) | 0.06 (0.08–0.52) | **0.01** |
| | | 6.1–9 min | 43 | 62 | 0.03 (0.00–0.22) | 0.02 (0.00–0.14) | **0.00** |
| | | >9 min | 22 | 22 | 0.02 (0.00–0.16) | 0.01 (0.00–0.09) | **0.00** |
| 6 | Dispensing time | ⩽2 min | 45 | 88 | 1 | | |
| | | 2.1–3 min | 28 | 98 | 1.79 (1.03–3.11) | 2.38 (1.20–4.71) | **0.01** |
| | | 3.1–4 min | 9 | 36 | 2.05 (0.91–4.61) | 2.44 (0.89–6.69) | 0.08 |
| | | >4 min | 7 | 7 | 0.51 (0.17–1.55) | 0.86 (0.21–3.55) | 0.83 |
| 7 | Privacy | Not satisfactory | 47 | 28 | 1 | | |
| | | Satisfactory | 42 | 201 | 8.03 (4.53–14.26) | 13.11 (6.41–26.80) | **0.00** |

COR: crude odd ratio; AOR: adjusted odd ratio.
p < 0.05, significant. The bold value showed that the significant value.

results of this study revealed that most of the respondents have good knowledge about the dose of the drug, route of administration, and duration of treatment. Whereas, more than three-fourth of the clients had poor knowledge about the name of their drug. Those respondents who are satisfied with drug labeling are three times more likely to have exit knowledge compared to the ones who are not satisfied. The overall satisfaction of the respondents was 72.01% which is approaching the national satisfaction assessment result. Most respondents were strongly satisfied with dose, route, frequency, and duration of treatment. However, they were strongly dissatisfied with the name of drug. After the multivariate analysis, privacy, waiting time, and dispensing time had an association with patient satisfaction. Based on the findings, labeling, waiting time, and privacy issues should be emphasized by the Pharmacy department, the management of the hospital, and other stakeholders.

## Authors' contributions

FSE, ATK, and EAB: conceived the study, drafted, and revised the study proposal, prepared data collection instruments. ATK and EAB supervised data collection, performed data analysis and interpretation, drafted the manuscript, revised and approved submission of the manuscript. All authors have read and approved the final manuscript version.

## Availability of data and materials

The materials and data of this study are available from the corresponding author upon request.

## Declaration of conflicting interests

## Funding

## Ethics approval and consent to participate

Ethical clearance was obtained from the Bahir Dar University Ethical committee with protocol number 00130/2022 and a formal letter was written and submitted to Felege Hiwot comprehensive specialized hospital. Both oral and written informed consent was obtained from each study participant after thoroughly explaining the aim of the study. All information obtained from the participants was kept confidential and the data were used for research purposes only. "All methods were carried out in accordance with relevant guidelines and regulations based on the Helsinki legislation."

## Informed consent

Written informed consent was obtained from all subjects before the study.

## Consent for publication

Not applicable.

## Trial registration

Not applicable.

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