

## Time of Health Care Seeking and Associated Factors among Patients with Sexually Transmitted Infections in Public Health Facilities of Assosa Zone, West Ethiopia, 2022

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### Abstract

**Background:** Majority of STIs are curable, but a number of social and behavioral factors prevent from seeking healthcare treatment timely, which increases the burden of untreated infection. Thus, activities people do when they have symptoms or suspect they have STI has a big impact on disease transmission and control. Delays in seeking treatment for STIs after symptom recognition can increase the incidence of disease.

**Objective:** To assess the time of health care seeking and associated factors among patients with sexually transmitted infections in public health facilities of Assosa Zone, Ethiopia, 2022.

**Method:** An institution -based cross-sectional study was employed to collect data from 416 STI patients from May 15 to July 15, 2022. Data were collected using a pretested structured interviewer- administered questionnaire. A systematic sampling method was used to select study participants. Binary logistic regression analysis was used to identify factors associated with time of health-seeking.

**Result:** From total sample patients, 404 (97.12%) were successfully interviewed. From them 40.1% [95%CI (35.4, 44.9%)] of study participants seek health care early within 7 days. attained secondary educational level [AOR =0.45; 95% CI (0.23,0.90)], had better knowledge about STI [AOR =2.27; 95% CI (1.28,4.02)], perceived the severity of STI [AOR=2.24; 95%CI (1.19,4.21)], those who had fear of stigma for STI [AOR=0.40;95%CI (0.24,0.66)] and had single sexual partners [AOR=2.19; 95%CI (1.20,3.99)] were significantly associated with time of health care seeking for sexually transmitted infections.

**Conclusion:** Lower than half of the study participants seek care within seven days of onset of symptoms. In-depth health education is essential to raise awareness, avoid risky behaviors, and alter negative perceptions.

**Keywords:** Time; Healthcare; Seeking; Sexually Transmitted Infection; Assosa; Ethiopia

## Introduction

According to World Health Organization (WHO), a sexually transmitted infection (STI) is defined as an infection caused by bacteria, virus, or parasite that can be transmitted from one person to another through sex or intimate contact. Currently there are over 30 pathogens, including bacterial, viral, and parasite that can cause STIs [1,3].

Health care seeking behavior is referred to as an action undertaken by individuals who perceive themselves as having a health problem or to be ill with the purpose of identifying the best course of actions [4,5]. It is a complex interaction of factors that involves on the time between the onset of disease and seeking medical care, the type of medical care chosen and the reasons for that choice, as well as medication compliance [6].

Activities that what people do when they have symptoms or suspect they have a STI has a big impact on disease transmission and control. Inappropriate health care-seeking behavior has been linked to poor health outcomes, increased morbidity and mortality, and poor health statistics [7].

It believed that as the duration of infection lengthens, it raises the chance of negative outcomes and STI transmission to others [8]. The issue of health care seeking is crucial to all societies because all societies rely on their human capital to achieve economic growth and development [9]. Thus, early detection and treatment of STIs is regarded as critical to comprehensive STI management and AIDS prevention.

Sexually transmitted infection are a major public health issue that has a negative impact on people's quality of life and leads to significant morbidity and mortality [10]. Around 1 million curable sexually transmitted illnesses (STIs) are diagnosed every day around the world. According to WHO estimates, in 2016, 376 million new infections of the four curable STIs such as chlamydia, gonorrhea, syphilis, and trichomoniasis were occurred [2,11]. Furthermore, adolescents and young adults have the highest incidence of treatable STIs, with up to one in every 20 teenagers developing a new STI each year [12]. The burden

of viral STIs is also high, with an estimated 417 million cases of herpes simplex virus infection and about 291 million women infected with human papillomavirus(HPV) [10].

Even though STIs are a global problem, there are regional variations [13]. STIs are exceedingly common in developing countries, approximately 108 million STIs occurred annually. It is believed that low-income nations account for 80 to 90 percent of the global burden of STIs [11].

Majority of STIs are curable, but a number of social and behavioral factors hinder peoples from seeking healthcare treatment early, which increases the burden of untreated infection [14]. Thus, delayed treatment or an untreated infection could lead to acute illnesses such as inflammation of the cervix, urethritis and ulceration of the genitals, harsh conditions such as Pelvic inflammatory diseases, ectopic pregnancy, infertility, cardiovascular diseases, blindness, severe or long term disability in infants and finally death [15].

Previous studies were revealed inconsistent results regarding to the time of health-care-seeking for STIs. Thus, the delayed health care seeking among patients with STIs was 23.1% in South Africa [16], 42% in Laos [17], 64% in Ghana [9] and 58% in Uganda [18]. Other study conducted in Gambella, Ethiopia reported that delayed health care seeking among STI patients was 56.8% [19].

The timing of the health care seeking among individuals with STI is often influenced by a variety of factors, including socio-demographic, cultural, behavioral, and economic circumstances, physical and financial accessibility, healthcare services, autonomy, and knowledge of STI [4,5,19]. Furthermore, the time it takes for STI patients to seek medical help is influenced by their access to health care and by cultural norms [20].

Despite widespread attention and numerous global initiatives aimed at reducing the frequency of STIs, but they have had little impact, particularly in Sub-Saharan Africa. Ethiopia also has approved the National Guidelines in 2015 for Syndromic Management of Sexually Transmitted Infections (STIs) and has

identified STI prevention and control as one of the HIV/AIDS prevention and control strategies [21]. In addition, various interventions implemented particularly in the study area, to reduce the burden of STIs, including HIV. Despite this, the magnitude of STIs remained high.

The majority of studies on STI-related health care seeking have focused on specific populations such as women, men, adolescents, and even the elderly. This study was look into the time of health care seeking of all patients with STIs because there is a link between all sub-groups. Because according to studies, STIs are spread from one to another [22]. In the event that disease prevention fails, it is important to understand the time of health care seeking of people with STIs, as well as the social and behavioral factors that influence this, in order to prevent further spread and other complications. Therefore, the aim of this study was to assess the time of health care seeking and associated factors among patients with sexually transmitted infections in public health facilities of Assosa Zone.

## Methods and materials

### Study design and Study Setting

An institution based cross-sectional study design was employed. This study was conducted in Public Health Facilities of Assosa Zone. Assosa zone is one of the three zones found in Benishangul Gumuz Regional State. Assosa town is the capital city of Benishangul Gumuz Regional State, which is located 667 km west of Addis Ababa (Capital city of Ethiopia), 230 km from Grand Ethiopian Renaissance Dam and 96km from Ethio-Sudan boarder. Administratively, Assosa zone is structured into seven districts/woredas. In the zone there are 27 functional public health facilities (Two hospitals and 25 health centers). The Study was conducted from May 15-July 15, 2022.

### Population and Eligibility Criteria of the Study

**Source population:** the source population were all patients who diagnosed as having STIs in public health facilities of Assosa Zone.

**Study population:** all patients who newly diagnosed as having STIs in the selected public health facilities during the study period were study population.

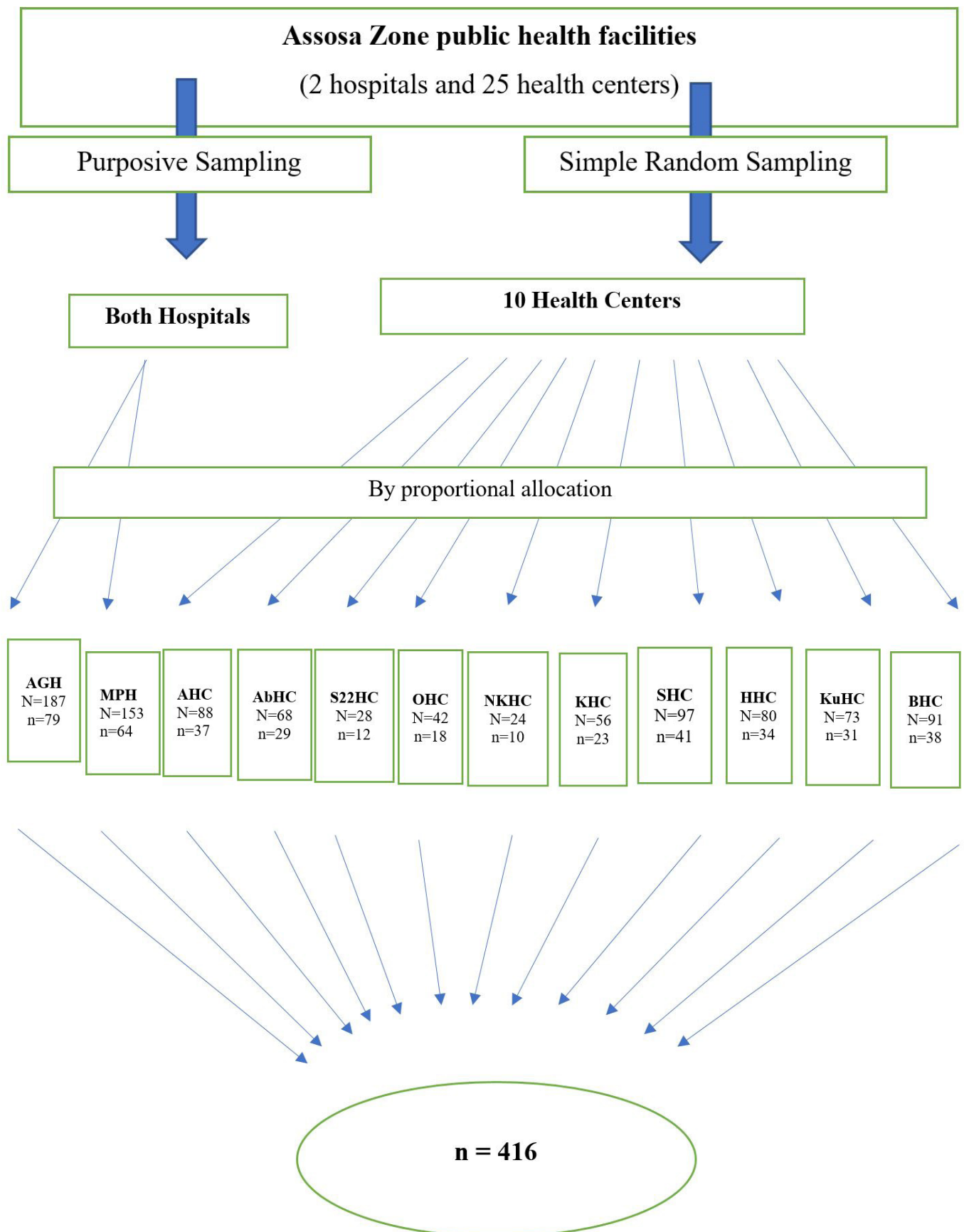
**Inclusive criteria:** all patients who newly diagnosed as having STIs, that attend the selected health facilities at the time of data collection.

**Exclusive criteria:** children below 15 years of age, mentally ill people and patients having an STI without symptoms were excluded.

### Sampling size and procedure

The sample size was calculated using single population proportion formula with the assumption: from previous study done in Gambella town, Ethiopia, the proportion of delayed health care seeking among patients with STIs was 56.8% (19), confidence interval of 95% ( $Z_{\alpha/2}=1.96$ ) and 5% of marginal error ( $d=0.05$ ). By adding 10% non-respondent rate the final sample size was **416**. Sample size determination by using the second objective (statistically significant factors) was calculated by Epi info version 7.2.1, and the maximum sample size was 366. Therefore, the sample calculated by the first objective was larger than the sample size determined by the second objective. Therefore, the final sample size for this study was 416.

There are 27 functional Public Health facilities in Assosa Zone: two hospitals and 25 Health centers. From those: Both hospitals were selected purposively. And among the health centers, 10 health centers were selected using lottery method to ensure equal chance of selection of health. Study participants were allocated to the selected health facilities based on equal population proportion to size by using previous two consecutive months STI report of each institution (See Figure 1). A systematic sampling method was used until the allocated sample for each facility was fulfilled.



**Figure 1:** Schematic presentation of sampling procedures for the selection of study subjects at Assosa zone public health facilities, Western, Ethiopia, 2022

## Operational definition

**Time of health care seeking for STIs:** The extent of time of health care seeking as a dependent variable was defined to the patient "How long day did you wait or postpone before seeking treatment at the health facility after noticing the first symptoms of sexual transmitted infection?" It has two response categories: Early health care seeking refers to patients who seek care and/or advice within 7 days of the onset of the STI symptoms. And delayed health care seeking refers to patients who seek care and/or advice after 7 days of the onset of the STI symptoms [19,23].

**Health care seeking:** is defined as an action undertaken by individuals who perceive themselves as having a health problem or to be ill for the purpose of finding appropriate treatment [4,9]. For the purpose of this thesis, health care seeking for STIs is defined as an act of seeking medical help for treatment, or advice and health education from healthcare facilities, while experiencing symptoms of STIs.

**Knowledge about STIs:** measure using 20 items, a mean score was used to determine the knowledge status of respondents on STIs. Respondents who score above the mean was categorized as having good knowledge and those who score equal to or below mean was categorized as having poor knowledge.

**Patients with STIs:** in this study referred as patients who presented with one or more of STI symptoms (urethral discharges, vaginal discharges, lower abdominal pain, penile ulcers or ulcers of the vulva or vagina, perineal ulcers, genital or perineal warts or painful micturition and other STI symptoms) [17].

## Data collection procedure

A structured interviewer- administered questionnaire was prepared according to the objectives of the study adapted from relevant literatures [4,19,24,25] in English language. Questionnaires were translated in to Amharic (local language) and back to English by two independent persons to keep the consistency of the questionnaires. The questionnaire includes socio-demographic, knowledge about STIs, beliefs and perception towards health care seeking, health system related characteristics and sexual behavioral related characteristics. Four supervisors and twelve data collectors, were recruited. Written information sheet with a section of informed consent was attached to the questionnaire to ensure all participants get the same directions

and information. Eligible study participants from the outpatient department were link to the data collectors, and the interview were conduct after patients received routine care in the facility.

## Data quality control

To assure the quality of data, training for the data collectors and supervisors were given. Pretest was done by taking 21 STI Patients (5%) of the total study subjects two weeks prior to the main data collection time at Mendi general hospital and Mendi Health center which are not included in the study to ensure content validity. Corrections on the instrument, clarity, and ambiguity of words were made accordingly after the pretest was conducted. Filed questionnaires were checked daily for completeness, and errors were corrected. Supervisor and principal investigator were closely followed the data collection process.

## Data processing and analysis

The collected data had been checked for its completeness, and then it was coded and entered into Epi-Data version 4.6 and exported to the SPSS Version 25 statistical software package for cleaning and analysis. To see the association between independent variable and dependent variable, bivariable and multivariable logistic regression analysis were carried out. Bivariable logistic regression was done to identify relationship between one independent variable and outcome variable. Variables with p-value was less than 0.25 in bivariable logistic analysis were included in multivariable logistic regression so as not to miss associated factors. Odd ratio with 95% confidence interval and p value were calculated. Variables having P-value  $\leq 0.05$  in the multivariable logistic regression analysis were considered as associated factors for time of health care seeking. The model fitness was checked using Hosmer-Lemeshow goodness of fit test and was found fit (0.82), and multicollinearity test was checked by Variance inflation factor (VIF), which was (1.11-1.97). Finally, the result was written in the form of a text description, tables and graphs.

## Ethical Approval

Ethical clearance was obtained from Institutional Review committee of Debre Markos University College of Health Science (Ref. no. HSR/R/C/Ser/PG/Co/169/11/14). Permission was also obtained from Assosa Zone health office and head from select health facilities for cooperation between patients and data collectors. The purpose of study, risk and benefit of study were explained to participant and written consent was taken from

study participant before start data collection. The confidentiality of the information was maintained by omitting their names and personal identification.

## Results

### Sociodemographic characteristics of respondents

Among 416 sample of STI patients, 404 respondents were participated in this study with a response rate of 97.12%. The mean age of respondents was 27.44(SD  $\pm$ 5.86), ranging

from 18 to 48 years. Nearly half 187(46.3%) of the participants were in the age category between 25 and 34 years. There was a male predominance 224(55.4%). Muslim and Orthodox were the major religions sought treatment each accounting 176 (43.5%) and 174 (43.1%) respectively. More than one third 148(36.6%) of the respondents attended college and above. More than half 230 (56.9%) of the respondents were married. (See Table 1)

**Table 1:** Socio-demographic characteristics of respondents in public health facilities of Assosa Zone, Benishangul Gumuz, Ethiopia, 2022. (N=404)

Variables	Category	Frequency n (%)
Age	18-24	163 (40.3)
	25-34	187 (46.3)
	$\geq$ 35	54 (13.4)
Sex	Male	224 (55.4)
	Female	180 (44.6)
Religion	Muslim	176 (43.5)
	Orthodox	174 (43.1)
	Protestant	48 (11.9)
	Catholic	6 (1.5)
Educational Status	No formal education	57 (14.1)
	Primary education	93 (23)
	Secondary education	106 (26.2)
	College and above	148 (36.6)
Marital status	Married	230 (56.9)
	Single	153 (37.9)
	Divorced	16 (4)
	Widowed	5 (1.2)
Occupation	Government Employee	63 (15.6)
	Housewife	39 (9.7)
	Farmer	64 (15.8)
	Private Business	50 (12.4)
	Student	78 (19.3)
	Merchant	51 (12.6)
	Other*	59 (14.6)
Residence	Urban	247 (61.1)
	Rural	157 (38.9)

**Note;** \*, daily labor, gold mining, NGO employee and jobless



## Knowledge about sexually transmitted infections

This study assessed four aspects of knowledge related questions on STIs which consists of 20 items. Those twenty knowledge related items were transmission, symptoms, prevention, and complication had 5, 7, 4 and 4, items respectively. The mean score of knowledge was 12.03 with SD of  $\pm 4.08$ . Nearly half 195 (48%) of the respondents scored above the mean (had good knowledge).

## Beliefs and perception towards health care seeking for STI

About 175(43.3%) of the respondents decided to seek medical help when they experienced mild illness. More than half

of respondents 211(52.2%) were knew their HIV status. On the other hand, 158(41.6%) of patients were perceived the illness as mild. Furthermore, about half 208(51.5%) of participants had fear of stigma for having STI. (See Table 2)

## Health system related characteristics

More than three fourth, 316(78.2%) of respondents reported that good approach of health care provider when they receive healthcare services. In addition, almost nearly half 197 (48.8%) of respondents had reported inconvenient location of health facility. On the other hand, long waiting time in the health facility were reported by 205 (50.7%) of respondents. (See Table 3)

**Table 2:** Beliefs and perception related characteristics of respondents towards health care seeking for STI in public health facilities of Assosa Zone, Benishangul Gumuz, Ethiopia, 2022. (N=404)

Variable	Category	Frequency n (%)
Time of decision	Mild illness	175 (43.3)
	Moderate illness	133 (32.9)
	Severe illness	96 (23.8)
Source advice about STI	Friend	166 (41.1)
	Health provider	131 (32.4)
	Spouse	65 (16.1)
	Other*	42 (10.4)
Knowing HIV status	Yes	211 (52.2)
	No	193 (47.8)
Perceive the severity	Not serious	158 (39.1)
	Neutral	89 (22.0)
	Very serious	157 (38.9)
Fear of stigma	Yes	208 (51.5)
	No	196 (48.5)

**Note:** \*from media, traditional healer, religious leaders and family members

**Table 3:** Health system related characteristics of respondents in public health facilities of Assosa Zone, Benishangul Gumuz, Ethiopia, 2022. (N=404)

Variable	Category	Frequency n(%)
Good Healthcare workers' approach	Yes	316 (78.2)
	No	88 (21.8)
Does cost of services delay you	Yes	202 (50)
	No	202 (50)
Health facility in convenient location	Yes	207 (51.2)
	No	197 (48.8)
Keep privacy	Yes	285 (70.5)
	No	119 (29.5)
Feel comfortable to ask question	Yes	334 (82.7)
	No	70 (17.3)
Received needed care	Yes	288 (71.3)
	No	116 (28.7)
Much Waiting time in the facility	Yes	205 (50.7)
	No	199 (49.3)

### Sexual behavior related characteristics

About one third 121(30%) of respondents were ever used condom. Among them 63(52.1%) used usually. Two third 268(66.3%) of patients with STIs continued sexual activity while having symptoms. In addition, about one third (35.9%) of respondents had more than one sexual partner. (See Table 4)

### Time of Health care-seeking for sexually transmitted infections

The proportion of early health care seeking for STI was 40.1% [95%CI (35.4, 44.9%)]. The median time of health care seeking for STI from the onset of symptom to the first visit to the health facility was 10 days.

**Table 4:** Sexual behavior related characteristics of respondents in public health facilities of Assosa Zone, Benishangul Gumuz, Ethiopia, 2022. (N=404)

Variable	Category	Frequency n(%)
Ever use of condom	Yes	121 (30)
	No	283 (70)
If, yes, how often do you use a condom(n=121)	Always	13 (10.7)
	Usually,	63 (52.1)
	Sometime	45 (37.2)
Number of sexual partners	One	259 (64.1)
	Two and above	145 (35.9)
Have sexual activity while symptomatic	Yes	268 (66.3)
	No	136 (33.7)

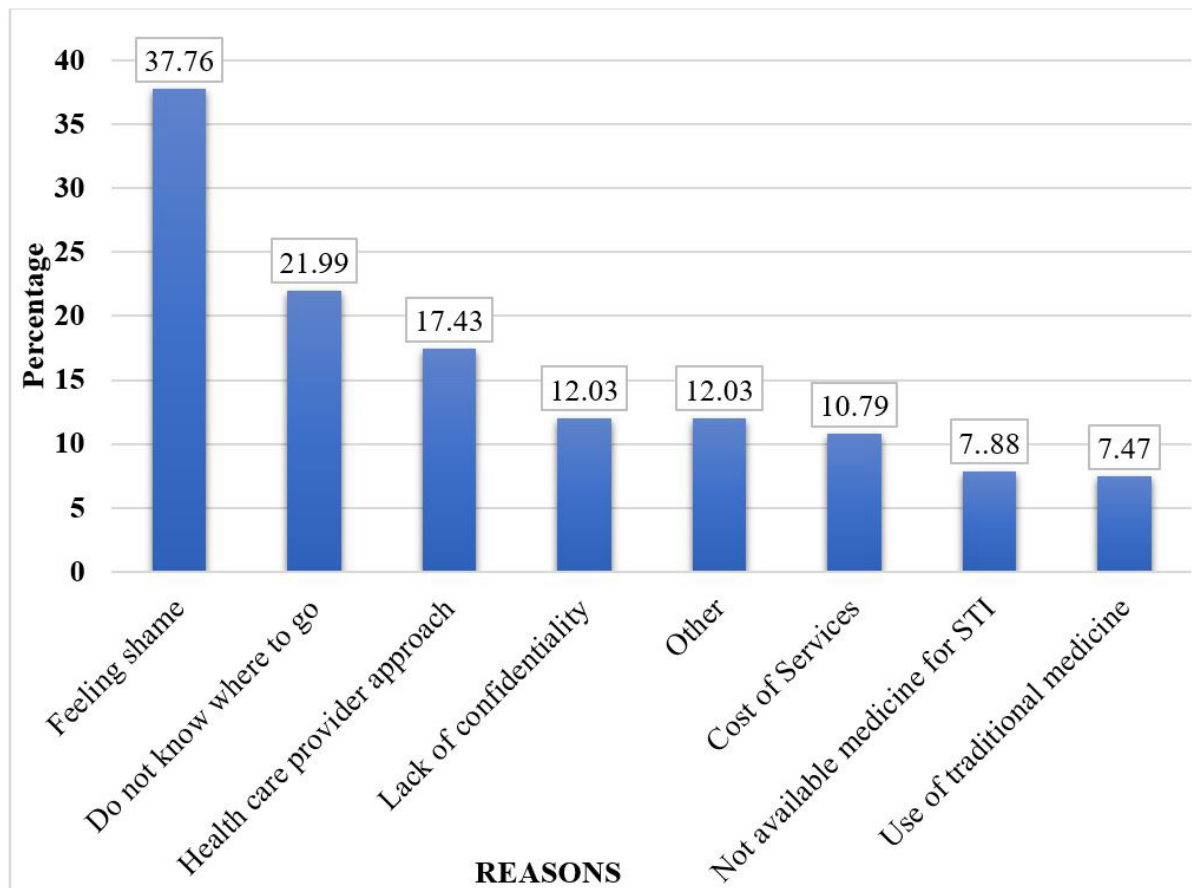


## Reasons for delay in health care seeking for STI

The predominant reasons reported for delay of health care seeking by respondents were: feeling of shame (37.76%), followed by don't know where to go (21.99%). (See Figure 2)

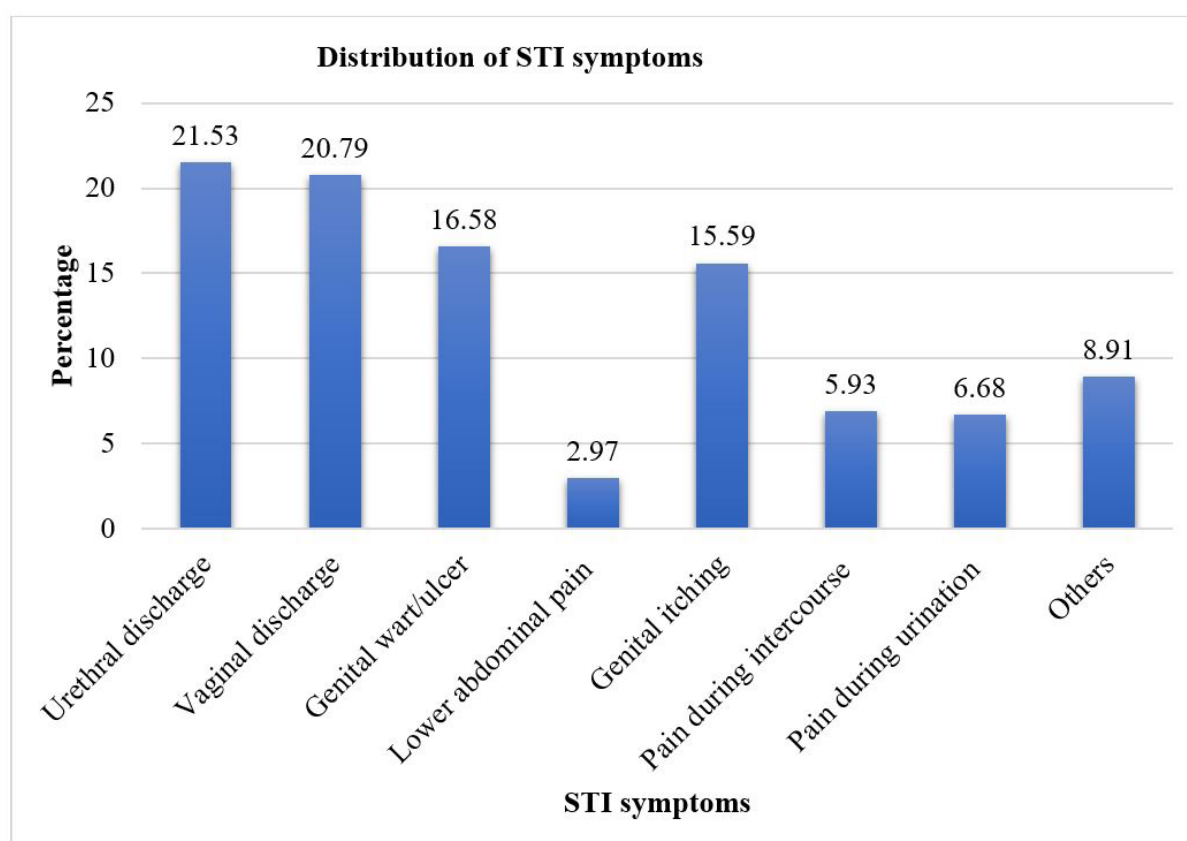
## Distribution of STIs symptoms of participants

Urethral discharge was the predominant STI symptom which accounts for 21.5% as reported by respondents followed by vaginal discharge (20.8%) and genital ulcer/wart (16.6%). (See Figure 3)



**Figure 2:** Reason for delay in health care seeking among sexually transmitted infections (STI) patients in public health facilities of Assosa Zone, Benishangul Gumuz, Ethiopia, 2022

**Note;** Other: disease not serious, went to pharmacy, through it would disappear, holy water, no time off work and didn't know what it was



**Figure 3:** Distribution of an STI symptoms among patients in public health facilities of Assosa Zone, Benishangul Gumuz, Ethiopia, 2022.

**Note;** Other: Scrotal swelling, inguinal swelling, perineal ulcer, bleeding after intercourse

### Factors associated with time of health care seeking for STI

Binary logistic regression analysis was applied to identify factors associated with time of health care seeking for STI. In a bivariable logistic regression analysis fourteen variables such as age, educational status, marital status, occupation, residence, knowledge about STI, time of decision, knowing HIV status, perceive the severity, fear of stigma, health care provider approach, cost of services, condom use and number of sexual partners were associated with time of health care seeking for STI. (See Table 5)

But only five variables were significantly associated with time of health care seeking for STIs in multivariable logistic regression such as educational status(secondary), having good Knowledge about STI, perceived the severity of illness, fear of stigma for STIs and had single sexual partners. (See Table 5)

The study revealed that the odds of early health care seeking for STIs were 55% lower among patients who were attended secondary education compared to those who were at-

tended college and above (AOR = 0.45, 95% CI = 0.23,0.90). In contrast to those respondents who had poor knowledge of STI, the odds of early health care seeking for STI were 2.27 times more likely among respondents who had good knowledge of STIs (AOR =2.27, 95% CI =1.28,4.02).

The odds of early health care seeking for STI treatment were 2.24 times higher among STI patients who perceived the illness as very serious compared to those who perceived as not serious (AOR= 2.24,95%CI=1.19,4.21). In addition, STI patients with fear of stigma for having STI were 60% less likely to seek health care early as compared to their counterparties (AOR =0.40, 95% CI =0.24,0.66).

Number of sexual partners was also significantly associated with time of health care seeking for STI, in which the odds of early health care seeking for STIs were 2.19 times more likely among STI patients with a single sexual partner when compared with those who had multiple sexual partners (AOR=2.19, 95% CI =1.20,3.99).

**Table 5:** Bivariable and Multivariable logistic regression analysis of factors associated with time of health care seeking of STI patients in public health facilities of Assosa Zone, Benishangul Gumuz, Ethiopia, 2022

Variables	Category	Time of health care seeking for STI		COR (95%CI)	AOR (95%CI)
		Early	Delay		
Age	15-24	80(49.5%)	83(50.9%)	1	1
	25-34	76(40.6%)	111(59.4%)	0.71(0.46,1.08) *	1.09(0.58,2.02)
	≥35	6(11.1%)	48(88.9%)	0.13(0.05,0.32) *	0.36(0.11,1.14)
Educational Status	No Formal Edu.	14(24.6%)	43(75.4%)	0.27(0.14,0.53) *	1.04(0.38,2.90)
	Primary Edu.	21(22.6%)	72(77.4%)	0.24(0.13,0.43) *	0.74(0.31,1.77)
	Secondary Edu.	46(43.4%)	60(56.6%)	0.63(0.38,1.05) *	<b>0.45(0.23,0.90) **</b>
	College & above	81(54.7%)	67(45.3%)	<b>1</b>	<b>1</b>
Marital Status	Unmarried	91(52.3%)	83(47.7%)	<b>1</b>	<b>1</b>
	Married	71(30.9%)	159(69.1%)	0.41(0.27,0.61) *	0.54(0.26,1.09)
Occupation	Gov't employee	28(44.4%)	35(55.6)	<b>1</b>	<b>1</b>
	House wife	13(33.3%)	26(66.7%)	0.62(0.27,1.43)	1.20(0.39,3.68)
	Farmer	17(26.6%)	47(73.4%)	0.45(0.21,0.95) *	1.37(0.44,4.31)
	Private business	20(40%)	30(60%)	0.83(0.39,1.77)	1.40(0.54,3.65)
	Student	42(53.8%)	36(46.2)	1.46(0.75,2.84)	1.39(0.52,3.70)
	Merchant	20(39.2%)	31(60.8%)	0.81(0.38,1.71)	1.39(0.53,3.68)
	Other	22(37.3%)	37(62.7%)	0.74(0.36,1.53)	1.11(0.41,3.02)
Residence	Urban	105(42.5%)	142(57.5%)	1.30(0.86,1.96) *	0.70(0.35,1.39)
	Rural	57(36.3%)	100(63.7%)	<b>1</b>	<b>1</b>
Knowledge about STI	Good	111(56.9%)	84(43.1)	4.09(2.68,6.26) *	<b>2.27(1.28,4.02) **</b>
	Poor	51(24.4%)	158(75.6%)	<b>1</b>	<b>1</b>
Knowing HIV status	Yes	96(45.5%)	115(54.5%)	1.61(1.07,2.40) *	1.20(0.72,2.01)
	No	66(34.2%)	127(65.8%)	<b>1</b>	<b>1</b>
Time of decision	Mild illness	86(49.1%)	89(50.9%)	<b>1</b>	<b>1</b>
	Moderate illness	47(35.3%)	86(64.7%)	0.57(0.36,0.90) *	0.86(0.48,1.56)
	Severe illness	29(30.2%)	67(69.8%)	0.45(0.26,0.76) *	0.99(0.50,1.95)
Perceive the severity	Not Serious	37(23.4%)	121(76.6%)	<b>1</b>	<b>1</b>
	Neutral	32(36%)	57(64%)	1.84(1.04,3.24) *	1.58(0.81,3.08)
	Very Serious	93(59.2%)	64(40.8%)	4.75(2.92,7.73) *	<b>2.24(1.19,4.21) **</b>
Fear of Stigma	Yes	53(25.5%)	155(74.5%)	0.27(0.18,0.42) *	<b>0.40(0.24,0.66) ***</b>
	No	109(55.6%)	87(44.4%)	<b>1</b>	<b>1</b>
Provider approach	Yes	138(43.7%)	178(56.3)	2.07(1.23,3.47) *	1.22(0.62,2.37)
	No	24(27.3%)	64(72.7)	<b>1</b>	<b>1</b>
cost of services	Yes	65(32.2%)	137(67.8%)	0.51(0.34,0.77) *	0.94(0.54,1.64)
	No	97(48%)	105(52%)	<b>1</b>	<b>1</b>
Ever use of condom	Yes	57(47.1%)	64(52.9%)	1.51(0.98,2.32) *	1.35(0.71,2.57)
	No	105(37.1%)	178(62.9%)	<b>1</b>	<b>1</b>
No. of sexual partner	One	120(46.3%)	139(53.7%)	2.12(1.37,3.27) *	<b>2.19(1.20,3.99) **</b>
	Two or more	42(29%)	103(71%)	<b>1</b>	<b>1</b>

\* p<0.25, \*\* p<0.05, \*\*\* p<0.001 COR =crude odd ratio, AOR =adjusted odd ratio, CI=confidence interval 1: reference group

## Discussion

This study attempted to assess time of health care seeking and associated factors among patients with sexually transmitted infections in public health facilities of Assosa Zone. The study revealed that the proportion of early health care seeking for STIs was 40.1% (95%CI=35.4, 44.9%).

This finding is consistent with that of a study conducted in Gambella of Ethiopia (43.2%) [19]. This similarity might be due to the similarity of sample size, design and study population. This finding is also in line with studies conducted in Kerala of India (41.9%) [26], Ghana (36%) [9] and in Luwero of Uganda (41.9%) [18]. This suggests that most of the patients practiced delayed health care seeking which could result in complications and emphasize the possible risk to the spread of STIs [19].

Meanwhile, the proportion of early health care seeking in this study is higher than other studies conducted in Ethiopia (further analysis of 2016 EDHS) (33.3%) [27] and in Vietnam (20%) [23]. This discrepancy might be due to difference in time gap of studies, sample size, study setting, study population, sampling procedure, data collection method and variation in culture.

On the other hand, this finding is lower than those of studies conducted in USA (70%) [28], Laos (58%) [17], South Africa (47%) [24] and Ghana (75.4%) [6]. This difference might be due to the difference in sample size, study setting and study population. Other reason might be due to socio-economic differences, cultural variation, awareness, and service accessibility, accesses to information and availability to services use.

One of significant associated factors of time of health care seeking for STI was educational status, the odds of early health care seeking for STIs were 55% times lower among patients who were attended secondary education compared to those who were attended college and above. This finding was consistent studies from Vietnam [23] and Ghana [5]. This due to the fact that education has a valuable input in enhancing confidence and capability to make decisions about their own health.

This study also revealed that patients who had good knowledge about STIs were more likely to seek health care early than those who had poor knowledge. This finding is in line with those of studies conducted in Addis Ababa, Ethiopia [29], in South Africa [24] and in Ghana [5]. The explanation for this

might be individuals with good knowledge about STIs are assumed to be better informed and thus empowered to take decisions with regards to their health timely.

Moreover, the finding of this study showed that early health care-seeking for STI was also affected by perceived severity of STI. Thus, the odd of early health care-seeking for STI were more likely among patients who perceived the illness as very serious than those who perceived as not serious. This finding is consistent with studies that conducted in Ghana [9] and in South west Ethiopia [25]. It is also supported by most recent study conducted in Gambella town of Ethiopia [19]. As evidenced by some studies [15,19], this association may be due to personal fear of the condition of illness and its complication. In addition, some respondents may hope that the disease will go away or believed that the disease is self-limiting.

In addition, respondents fear of stigma for having STIs had also association with early health care seeking for STI. Respondents who reported fear of stigma for being exposed for STIs were less likely to seek health care early than their counterparts. This finding is consistent with the studies done in Ethiopia [19], in Ghana [6,9]. The possible reason for this might be afraid of how health care provider and other people will look at them and fear of the health care staff judgment as well as social embarrassments as suggested by pervious study [30]. In addition, patients presented with STIs often feel fear of stigma to seeking care early for their STIs in health facilities where they are familiar with health care providers.

Furthermore, respondent with single sexual partner were more likely to seek health care early than those with multiple sexual partners in this study. This finding is in line with the studies done in Gambella town of Ethiopia [19]. The possible explanation for this might be because people those with a single sexual partner are in a union so that they worry about both their own health and the health of their partner with the aim of protecting their partner. For instance, they may also seek care early due to fear of complications and engaging in risky sexual behavior as suggested by a study from Ethiopia [30].

## Conclusion and Recommendation

This study has provided important information regarding the time of health care seeking and associated factors among STIs patients. The findings of the study show that lower than half of the study participants seek care within seven days of onset of

symptoms. Secondary educational level, good knowledge about STI, perceived the severity of STI, fear of stigma and had single sexual partners were factors significantly associated with time of health care seeking for STI.

### **The following recommendation were derived in view of the result of this study:**

A collaborative effort is needed to eliminate delayed health care seeking for STI. They also need to communicate with patients in a sensitive and nonjudgmental way to reduce patients fear of stigma. Thus, the personal attribute of the health care worker is important to build trust between the patient and care giver.

Existing health education initiatives should put a strong emphasis on enhancing people knowledge of STI transmission, causes, complication, prevention and treatment. It is recommended that confidential services be provided at all public health facilities to ensure privacy and reduce patients fear of shame/stigma when attending such facilities for STI treatment.

Health care facilities need to prepare STI campaigns to change unsafe sexual behaviors such as having multiple sexual partners. The severity of STIs and their consequences, as well as the implications of an increased risk of transmission to partners, should be addressed in health education programs.

Inclusion of basic facts about STIs in sexuality education and the school curriculum especially secondary schools to boost up their knowledge of STIs, to discourage the positive perceptions that favor peoples with multiple sexual partners and thereby reduce the transmission and increase the prevention of STIs. Furthermore, it is important that the general population should be made aware of the basic issues relating to STIs, in order to have a tolerant view towards people with STIs and to not discriminate against them.

Findings of this study indicates the need to conduct further studies to explore the reasons for delay in health care seeking for STI using a qualitative study method.

## **Acronyms and Abbreviations**

AOR: Adjusted Odds Ratio; CI: Confidence Interval; COR: Crude Odds Ratio; EDHS: Ethiopian Demographic and Health Survey; RTIs: Reproductive Tract Infections; SPSS: Statistical Package for Social Sciences; STIs: Sexually Transmitted Infections; WHO: World Health Organization.

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## **Availability of data and materials**

The original data for this study are available from the corresponding author upon reasonable request.

## **Competing interests**

The authors declare that there are no conflicts of interest regarding the publication of this paper.

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## **Author Contributions**

Conceptualization: DM, BT, GD, EB. Formal analysis: DM. Funding acquisition: DM. Investigation: DM, BT, GD, SW, AM. Methodology: DM, BT, GD, SW, AM, EB. Supervision: DM, SW, AM. Validation: DM BT GD SW AM. Visualization: DM BT GD SW AM, EB. Writing-original draft: DM. Writing-review& editing: DM BT GD SW AM, EB.

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