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Factors Affecting COVID 19 Screening Among Patients attending OPD Services at Lira Regional Referral Hospital Lira District Northern Uganda

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ABSTRACT

COVID-19 was a quickly progressing disease but unfortunately, currently, scientists have not discovered potential therapeutic agents which are effective; which leaves preventive measures such as screening to be the most effective means of curbing the spread of COVID-19. The study aimed at determining the prevalence and identifying the factors affecting COVID-19 screening among patients attending OPD Services at Lira regional referral hospital, Lira District northern Uganda so as to develop mechanisms to ensure that screening for COVID-19 is scaled up. A cross-sectional health facility-based study was conducted among 384 patientsattending OPD of Lira Regional Referral Hospital. A simple random sampling technique was used to include the participants. Pre-tested and structured questionnaires were used to collect the required data. To determine factors associated with COVID-19 screening, univariate analysis andmodified Poisson regression were run and crude prevalence ratios with 95% confidence interval were used to determine the level of significance at bivariate meanwhile adjusted prevalence ratios were calculated at multivariate analysis to establish independent significant factors. The prevalence of COVID-19 screening was 64.06% (246/384) with a 95% confidence interval of 59.24 -68.88. The factors independently associated with COVID-19 screening were; Education level; Primary (Apr 1.31, 95%CI 1.02-1.69, P=0.035), secondary; (Apr 1.31, 95%CI 1.00-1.71, P=0.047), Tertiary; (Apr 1.38, 95%CI 1.05-1.80, P=0.019). Perceived Understaffingin this hospital (Apr 1.31, 95%CI 1.02-1.69, P=0.035) and Community COVID-19 Outreaches (Apr 1.28, 95%CI 1.14-1.44, P<0.001). The study has shown that the prevalence of COVID-19 screening was 64.06%, which means that 35.94% of patients who visited OPD during the study period were not screened for COVID-19. Education level, Perceived Understaffing and Community COVID-19 Outreaches were independently associated with COVID-19 Screening among OPD patients at Lira Regional Referral Hospital.

Keywords: Factors affecting screening of COVID-19, Disease, OPD patients, Health facility, Community COVID-19 Outreaches.

INTRODUCTION

In December 2019, a new disease which has since threatened the existence of the human race was reported among patients with viral pneumonia symptoms in Wuhan City of China [1, 2]. Also known as Coronavirus Disease 2019, COVID-19 is a pandemic of its own kind which is swiftly intensifying and it is caused by a novel human coronavirus (SARS-COV-2), a microorganism which was formerly known as 2019-nCov [3, 4]. The outbreak of the pandemic was found to be very closely associated with the seafood market located in Wuhan, in the Hubei province of China, much as other non-aquatic animals were also being sold in the same market before the outbreak [5]. Human beings are vehicles through which the Coronavirus can travel from one person to another [6], the Coronavirus is spread between people through close contact, fomites and droplets, with possible routes of transmission being the eyes, nose and mouth [6] which makes screening for COVID 19 very essential at every entry point of the hospital so that COVID 19 free patients who have gone to receive other medical services don‟t get infected by seemingly unknowing COVID 19 positive individuals [6]. The

pandemic is exceedingly contagious with vast potential for societal, economic and health impacts with healthcare workers at the front line being most vulnerable [7]. Worldwide, as of 21st September 2021, there have been 229,892,408 confirmed cases of COVID-19 with 206,576,101 patients recovering from the disease meanwhile 4,714,987 people died from the same disease [8]. United States of America being among the most affected countries had 43,107,628 confirmed cases, 32,675,982 recoveries and 694,619 deaths as of 21st September 2021 [9]. As of 21st September 2021, a total of 8,242,857 COVID-19 cases had been confirmed in Africa with 206,897 deaths and 7,518,418 recoveries [10]. COVID-19 screening is therefore crucial in the early detection of COVID-19 cases so that medical attention is given early in order to reduce the risk of mortality. There has been quick critical global collaboration and worldwide communication efforts aimed at averting the spread of the virus further. The concerned bodies put in place specific approaches for prevention namely; social distancing, quarantine, self-isolation, and the case individuals who have come in contact with the virus, are to be taken to a facility with specialized medical quarantine equipment to help in the assessment and monitoring for symptoms of COVID-19. These universal precautions possibly have been of great help in preventing and reducing the transmission of the virus [11]. But to be put under consideration are the factors affecting the screening for COVID-19 among patients attending the Outpatient‟ department since it may influence the reduction in the spread of the pandemic [12]. Many countries on the African continent have recorded COVID-19 cases; conversely, there is nervousness that readiness for the pandemic may be jeopardized by the rising burden of infectious diseases such as tuberculosis, malaria, HIV, as well as other tropical diseases [13, 14]. African countries should intensify screening for COVID-19 signs and symptoms among the masses so that COVID-19 cases can be identified and managed when it's still mild since Africa does not have equipped health facilities to manage thousands of people infected with COVID-19; as even the systems of healthcare in the high-income countries have been subdued by patients notwithstanding the fact that they are better equipped [15].

According to the Uganda Ministry of Health, there were 122,083 confirmed cases, and 3,123 death cases as of 21st September 2021 [16]. The rapid rise in the number of COVID-19 cases being observed in Uganda was placing an ever-bigger strain on health services and this has very tangible consequences which are felt and faced by individuals working in the health sector which is evidenced by the rising number of health workers infections [17]. Reports have confirmed that over 10,000 healthcare workers in 40 African countries are battling for their lives after getting infected with COVID-19 [17] meanwhile as of July 2021, Uganda had registered 37 confirmed cases of healthcare workers infected with coronavirus meanwhile the virus had claimed lives of 58 Ugandan health workers [18]. During the course of any pandemic, healthcare workers are exceptionally strained [19, 20] due to their responsibility as key players in fighting a pandemic. They are the primary individuals that have contact with patients and are at high risk of exposureto infected cases brought in the healthcare settings if such patients are not screened and isolationof those suspected positive done [21]. The risk of infection to health workers has risen due to weak infection prevention and control measures such as failing to screen patients receiving services at OPD [22]. Cumulatively, Lira has tested 5,924 persons of whom 424 tested positive, 312 of the positive cases were hospitalized whereas 112 received home-based care [23] which is an indication that the virus has posed a heavy burden to the district. With Uganda undergoing a phased easing of the lockdown, strict implementation of personal hygiene and behaviours of public health like washing hands and social distancing are essential in curbing the spread of coronavirus, nevertheless practising these in many parts of the country will be challenging [24], which may result in super-spreading events that could speed up transmission of coronavirus [25]. Low screening for COVID-19 especially

among patients attending health facilities would be an intervening constituent in the increasing number of cases the virus has infected. To succeed in flattening the curve in Uganda, timely and actionable data about the factors affecting screening for COVID-19 among patients attending services at OPD of a regional referral hospital was required to design policies and interventions that are understood easily and are relevant to the lives of the beneficiaries.

METHODOLOGY

Research Design

This was a descriptive and analytic cross-sectional study which employed quantitative data collection methods. It was a cross-sectional type of design because it involved the collection of data from a single point in time. A cross-sectional study design can be used when studying different groups of people who differ in the variable of interest but share other characteristics like educational background, and economic among others. The quantitative data collection method was used because it enabled the researcher to collect numerical data and perform quantitative analysis using statistical procedures.

Area of Study

The study was conducted at Lira Regional Referral Hospital. During the Decentralization in the 1980s and 1990s, Lira Hospital was designated a District Hospital. However, in 2004, it was elevated to the Regional Referral status. This is a 350-bed hospital serving a population of about 2.5 million in the Districts of Lira, Apac, Amolatar, Dokolo, Alebtong, Kobe, Oyam and Otuke. It also acts as a referral facility offering both specialized and general services to the districts inits service area as well as the neighbouring Districts of Abim, Kotido, Pader, Kaberamaido, Amuria, Kiryandongo and Masindi. The Hospital was made up of three major departments i.e., Finance and Administration, Nursing and Clinical department. It offers specialized services in the areas of obstetrics and Gynecology, Surgery, Internal Medicine, Pediatrics, and ENT and expects to expand these specialized services in the near future to cover all other specialities and subspecialties of medical care. Data collection was done from the outpatient department, there are some information gaps and the Health Management Information System of the hospital does not reflect the level of patient-related activities in the Hospital.

Study Population

The study population comprised patients receiving medical services from Lira Regional Referral Hospital.

Inclusion criteria

- Those aged 18 years and above.
- Those who were receiving services from the outpatient department of LRRH.
- Those who had gone to escort their patients.

Exclusion criteria

- Those who consented to participate in the study.
- Those who were too sick to answer the study questions.
- Those who were admitted to the inpatient department.

Sample Size Determination

Fisher's formula was used to determine the Sample size

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

Where;

n = Minimum sample size

Z = The table value for standard normal deviation corresponding to a 95% significance level(=1.96).

P = Prevalence of characteristic being estimatedd = Margin error, set at 0.05

The sample size of this study was calculated using the estimated prevalence of 50% based on since there was no similar study done in the local context and the value used for P was 50%.

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

$$n = \frac{(1.96)^2 0.5(1-0.5)}{(0.05)^2}$$

$$n = \frac{3.8416 \text{ x } 0.25}{0.0025} = 384.$$

From above, our sample size was 384 participants.

Sampling Techniques

Simple random sampling was used to select the study participants. The aim of simple random sampling was to reduce the potential for human bias in the selection of cases to be included in the sample. With this method, the researcher identified the study population, and chose the sample size,

small pieces of paper written on "participant" or "non-participant" was folded and mixed up and then put in a box from which each participant was asked to select and not return it back. Only those who picked papers written on participants were then asked to fill out a brief questionnaire.

Study procedure

Before entry into the Hospital to conduct the data collection, the researcher went to the hospital director with an introductory letter from the Dean Faculty of Clinical Medicine and Dentistry so as to seek permission to do data collection at OPD. Every morning of weekdays during the study period, the principal investigator went to OPD 30 minutes before health workers started providing services. The purpose of the study was explained to the study participants after which they were given opportunities to ask questions and their questions were answered accordingly. Written consent was sought from the study participants. Those who consented to take part in the study were recruited to participate in the study and they were given to complete the study questionnaires meanwhile those who refused to consent were excused and were excluded from the study. During data collection, face-to-face interviews were used to collect data from the eligible study participants. Those who were literate were given to fill out the questionnaires on their own meanwhile those participants who were illiterates were helped to fill the question by the principal investigator but whatever was filled in the questionnaire were their actual response.

Data sources

Data was collected from both primary and secondary sources. Primary data was collected from the respondents using researcher-administered questionnaires meanwhile Secondary data was accessed from the internet, other documents plus related peer review Journals, electronic books, library books, and research

Data collection Instrument

Data was collected by the use of pre-tested semi-structured questionnaires that were researcher administered. The data collection instrument or the questionnaire was prepared after consulting with the immediate supervisor and after a thorough review of the available literature. The questionnaire was composed of 3 sections with each section covering each of the specific objectives of the study. The questionnaire was composed of closed-ended questions which required dichotomous responses of ticking yes or no. Other questions had multiple choices which required the respondents to choose the most appropriate answers.

Data Analysis Plan

Data was analyzed by the use of STATA version 14.0. categorical variables were described in percentages. Continuous variables were compared using the Mann-Whitney test and categorical variables were compared using the Chi-square test. The dependent variable was "being screened for COVID 19" which was coded as "0" for those not screened and coded as "1" for those screened. Binary and multivariate logistic regressions were run to assess the factors affecting COVID-19 screening. Significant Variables in bivariate analysis and Variables having $P<0.20$ level in the bivariate analysis were included in the final multivariate logistic regression analysis, to identify independent factors. The forward stepwise regression method was applied to get a list of best predictors and the statistical test was considered significant at P level less than 0.05 in the final model. Findings were summarized in the form of tables, pie charts and graphs as well as plain text.

RESULTS

Descriptive Statistics of Characteristics of the Study Participants

Socio-demographic Characteristics

Table 1 below shows that the majority of the study participants 39.84% (153/384) were in the age group of 26 to 35 years, had primary as the highest level of education 45.31% (174/384) and were employed 72.40% (278/384).

Results showed that the majority of the participants 58.59%(225/384) lived in rural areas of residence, were Christians 40.87% (157/384) and were married 58.63% (206/384). Furthermore, the majority of the study participants were 60.94% (234/384) and were less than 300,000 shillings 53.39 (205/384).

Table 1; Shows the Frequency distribution for socio-demographic Characteristics of the Study Participants.

Variable	Frequency (n)	Percentage (%)
Age in years		
18 – 25	79	20.57
26 – 35	153	39.84
≥36	152	39.58
Education Level		
Not Educated	108	28.13
Primary	174	45.31
Secondary	65	16.93
Tertiary	37	9.64
Employment Status		
Employed	278	72.40
Unemployed	106	27.60
Area of Residence		
Urban	159	41.41
Rural	225	58.59
Religion		
Christian	157	40.89
Muslim	83	21.61
Born Again	82	21.35
Others	62	16.15
Continuation of Table 1		
Marital Status		
Single	91	23.70
Married	206	53.65
Divorced	56	14.58
Widowed	31	8.07
Gender		
Male	150	39.06
Female	234	60.94
Average Monthly Income		
Less than 300,000	205	53.39
300,0000 or more	179	46.61

Health System-related Characteristics

Table 2 below shows the frequency distribution of the health system-related characteristics of the study participants. It can be observed from the table that the majority of the study participants 61.72%(237/384) said that they heard about the COVID-19 screening campaign on the radio, 73.18% (281/384) said that they had been told about COVID 19 screening benefits, 85.16% (327/384) said that the health workers were available to screen for COVID 19. Furthermore, 74.22 (285/384) said that health staff are rude to patients, and 69.79% (285/384) said that health staff abuse patients. Additionally, the majority of the study participants 40.36% (155/384) said that the distance from their home to the hospital was less than 5km. More than half of the study participants 58.33% (224/384) said that they had access to other facilities which do COVID-19 screening, and 69.79% (268/384) of the study participants said that there was

understaffing in this hospital. Lastly, the majority of participants 64.32 (247/384) said that there were COVID-19 outreaches in their community.

Table 2; Frequency Distribution table for health facility-related Characteristics

Variable	Frequency (n)	Percentage (%)
Heard about the COVID-19 Screening campaign on the radio		
Yes	237	61.72
No	147	38.28
Told about COVID-19 screening benefits		
Yes	281	73.18
No	103	26.82
Availability of health workers to screen for COVID-19		
Variable	**Frequency (n)**	**Percentage (%)**
Yes	327	85.16
No	57	14.84
Health staff are rude to patients		
Yes	285	74.22
No	99	25.78
Health staff abuse Patients		
Yes	268	69.79
No	116	30.21
Distance from home to this hospital		
<5 km	155	40.36
5 – 10 km	135	35.16
>10 km	94	24.48
Access to other facilities which do COVID-19 screening		
Yes	224	58.33
No	160	41.67
Perceived Understaffing in this hospital		
Yes	268	69.79
No	116	30.21
Community COVID-19 Outreaches		
Yes	137	35.68
No	247	64.32

The Prevalence of COVID-19 Screening Among Patients Attending OPD Services at LiraRegional Referral Hospital, Lira District Northern Uganda.

Table 7 below shows the Prevalence of COVID-19 Screening among Patients Attending OPD Services at Lira Regional Referral Hospital. As observed in the table, the prevalence of COVID-19 screening was 64.06% (246/384) with a 95% confidence interval of 59.24 -68.88.

Table 3: Prevalence of COVID-19 screening among patients attending OPD Services

Screened	Frequency (n)	Percentage (%)	95% Confidence Interval
Yes	246	64.06	59.24 – 68.88
No	138	35.94	31.12 – 40.76

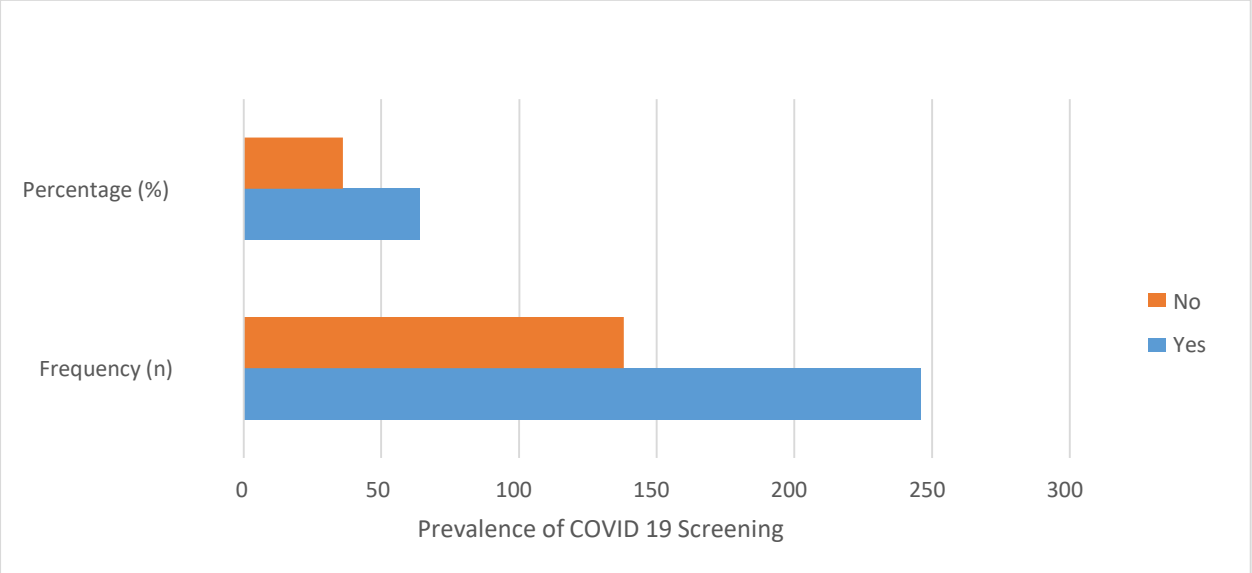

Figure 1: Bar Graph showing the prevalence of COVID 19 Screening

The Socio-Demographic Factors AffectCOVID-19D 19 Screening Among Patients Attending OPD Services at Lira Regional Referral Hospital, Lira District Northern Uganda.

A modified Poisson regression was run to determine the factors AffectCOVID-19D 19 Screening among Patients Attending OPD Services at Lira Regional Referral Hospital. Table 4 shows the socio-demographic factors which affCOVID-19D 19 Screening among the study participants. Results of the analysis revealed that age, education level and area of residence were the only socio-demographic factors affecting COVID-19 screening. Study participants who were 36 years and above were 1.26 times more likely to be screened for COVID-19 than those who were in the age group of 18-25 years (CPR 1.26, 95%CI 0.99-1.58, P=0.050).

Study participants who had a primary level of education were 2.46 times more likely to be screened for COVID-19 compared to those who were not educated (CPR 2.46, 95%CI 1.83-3.32, P<0.001). Study participants who had a secondary level of education were 2.62 times more likely to be screened for COVID-19 compared to those who were not educated (CPR 2.62, 95%CI 1.92-3.57, P<0.001). Study participants who had a tertiary level of education were 2.65 times more likely to be screened for COVID-19 compared to those who were not educated (cPR 2.65, 95%CI 1.92-3.67, P<0.001). Study participants who were from rural areas of residence were 1.03 times more likely to be screened for COVID-19 than those ones from urban areas of residence (CPR 1.03, 95%CI 0.88-1.20, P<0.001).

Table 4: Socio-demographic factors affecting COVID-19 screening among patients attending OPD Services

Variables	Screened for COVID 19		CPR (95% CI)	P Value
	No Count, (%)	Yes Count, (%)		
Age in years				
18 – 25	36 (45.57)	43 (54.43)	1.00	
26 – 35	54 (35.29)	99 (64.71)	1.19 (0.94-1.50)	0.147
≥36	48 (31.58)	104 (68.42)	1.26 (0.99-1.58)	**0.050**
Education Level				
Not Educated	75 (69.74)	33 (30.56)	1.00	
Primary	43 (24.71)	131 (75.29)	2.46 (1.83-3.32)	**<0.001**
Secondary	13 (20.00)	52 (80.00)	2.62 (1.92-3.57)	**<0.001**
Tertiary	07 (18.92	30 (81.08)	2.65 (1.92-3.67)	**<0.001**
Employment Status				
Employed	98 (35.25)	180 (64.75)	1.00	
Unemployed	40 (37.74)	66 (62.26)	0.96 (0.81-1.14)	0.656
Area of Residence				
Urban	59 (37.11)	100 (62.89)	1.00	
Rural	79 (35.11)	146 (64.89)	1.03 (0.88-1.20)	**<0.001**
Religion				
Christian	58 (36.94)	99 (63.06)	1.00	
Muslim	24 (28.92)	59 (71.08)	1.13(0.93-1.35	0.198
Born Again	28 (34.15)	54 65.85)	1.04 (0.86-1.27)	0.666
Others	28 (45.16)	34 (54.84)	0.87 (0.67-1.12)	0.285
Marital Status				
Single	33 (36.26)	58 (63.74)	1.00	
Married	75 (36.41)	131 (63.59)	0.1.00 (0.83-1.20)	0.981
Divorced	22 (39.29)	34 (60.71)	0.95 (0.73-1.24)	0.716
Widowed	8 (25.81)	23 (74.19)	1.16 (0.90-1.51)	0.251
Gender				
Male	62 (41.33)	88 (58.67)	1.00	
Female	76 (32.48)	158 (67.52)	1.15 (0.98-1.35)	0.088
Average Monthly Income				
Less than 300,000	69 (33.66)	136 (66.34)	1.00	
300,0000 or more	69 (38.55)	110 (61.45)	0.93 (0.80-1.08)	0.323

CI = Confidence Interval, CPR = Crude Prevalence Ratio, P-Value is Significant at 0.05 level

The Health System Factors Affecting COVID-19 Screening among Patients Attending OPD Services at Lira Regional Referral Hospital, Lira District Northern Uganda

The results of a modified Poisson regression revealed that 4 health system-related factors affected COVID-19 screening as shown in Table 5 below. The factors include; Hearing about COVID-19 Screening campaign on the radio (CPR 1.22, 95%CI 0.86-1.21, P=0.008), Availability of health workers to screen for COVID-19 (CPR 0.35, 95%CI 0.23-0.55, P<0.001), Health staff are rude to patients (cPR 0.20, 95%CI 0.27-0.31, P<0.001), Perceived Understaffing in this hospital (cPR 0.16, 95%CI 0.10-0.25, P<0.001).

Table 5: The health system factors affecting COVID-19 screening among patients attending OPD Services

Variables	Screened for COVID 19		CPR (95% CI)	P Value
	No Count, (%)	Yes Count, (%)		
Heard about the COVID-19 Screening campaign on the radio				
Yes	97 (40.93)	140 (59.07)	1.00	
No	41 (27.89)	106 (72.11)	1.22 (1.05-1.41)	**0.008**
Told about COVID-19 screening benefits				
Yes	102 (36.30)	179 (63.70)	1.00	
No	36 (34.95)	67 (65.05)	1.02 (0.86-1.21)	0.806
Availability of health workers to screen for COVID 19				
Yes	95 (29.05)	232 (70.95)	1.00	
No	43 (75.44)	14 (24.56)	0.35 (0.23-0.55)	**<0.001**
Health staff are rude to patients				
Yes	55 (19.30)	230(80.70)	1.00	
No	83 (83.84)	16 (16.16)	0.20 (0.27-0.31)	**<0.001**
Health staff abuse Patients				
Yes	91 (33.96)	177 (66.04)	1.00	
No	47 (40.52)	69 (59.48)	0.90 (0.76-1.07)	0.236
Distance from home to this hospital				
<5 km	54 (34.84)	101 (65.16)	1.00	
5 – 10 km	50 (37.04)	85 (62.96)	0.97 (0. 81-1.15)	0.698
>10 km	34 (36.17)	60 (63.83)	0.98 (0.81-1.15)	0.832
Access to other facilities which do COVID-19 screening				
Yes	77 (34.38)	147 (65.63)	1.00	
No	61 (38.13)	99 (61.88)	0.94 (0.81-1.100)	0.455
Perceived Understaffing in this hospital				
Yes	38 (14.18)	230 (85.82)	1.00	
No	100 (86.21)	16 (13.79)	0.16 (0.10-0.25)	**<0.001**
Community COVID-19 Outreaches				
Yes	57 (41.61)	80 (58.39)	1.00	
No	81 (32.79)	166 (67.21)	1.15 (0.97-1.35)	0.098

Multivariate Analysis to Show Factors Independently Affecting COVID-19 Screeningamong Patients Attending OPD Services at Lira Regional Referral Hospital, Lira District Northern Uganda.
For the multivariate model, factors which had p-values less than 0.20 at bivariate analysis were added to the model and a multivariate analysis was executed to determine factors independently affecting COVID-19 screening among the study participants. Through a stepwise regressionwith the removal of the least significant variables in each step, the following factors remained independently affecting the COVID-19 screening: Education level; Primary (APR 1.31, 95%CI 1.02-1.69, P=0.035), secondary; (Apr 1.31, 95%CI 1.00-1.71, P=0.047), Tertiary; (Apr 1.38, 95%CI 1.05-1.80, P=0.019). Perceived Understaffing in this hospital (Apr 1.31, 95%CI 1.02-1.69, P=0.035) and Community COVID-19 Outreaches (Apr 1.28, 95%CI 1.14-1.44, P<0.001).

Table 6: Multivariate Analysis to Show Factors Independently Affecting COVID-19 Screening among Patients Attending OPD Services

Variables	Screened for COVID 19		APR (95% CI)	P Value
	Yes Count, (%)	No Count, (%)		
Age in years				
18 – 25	36 (45.57)	43 (54.43)	1.00	
26 – 35	54 (35.29)	99 (64.71)	1.12 (0.95-1.31)	0.187
≥36	48 (31.58)	104 (68.42)	1.02 (0.87-1.18)	0.844
Education Level				
Not Educated	75 (69.74)	33 (30.56)	1.00	
Primary	43 (24.71)	131 (75.29)	1.31 (1.02-1.69)	**0.035**
Secondary	13 (20.00)	52 (80.00)	1.31 (1.00-1.71)	**0.047**
Tertiary	07 (18.92	30 (81.08)	1.38 (1.05-1.80)	**0.019**
Religion				
Christian	58 (36.94)	99 (63.06)	1.00	
Muslim	24 (28.92)	59 (71.08)	1.00 (0.89-1.13)	0.094
Born Again	28 (34.15)	54 65.85)	1.08 (1.02-1.24)	0.378
Others	28 (45.16)	34 (54.84)	0.99 (0.82-1.20)	0.911
Heard about COVID-19 Screening campaign on the radio				
Yes	97 (40.93)	140 (59.07)	1.00	
No	41 (27.89)	106 (72.11)	1.03 (0.93-1.13)	0.590
Availability of health workers to screen for COVID 19				
Yes	95 (29.05)	232 (70.95)	1.00	
No	43 (75.44)	14 (24.56)	1.03 (0.77-1.79)	0.463
Health staff are rude to patients				
Yes	55 (19.30)	230(80.70)	1.00	
No	83 (83.84)	16 (16.16)	0.84 (0.46-15)	0.561
Perceived Understaffing in this hospital				
Yes	38 (14.18)	230 (85.82)	1.00	
No	100 (86.21)	16 (13.79)	1.19 (0.09-0.34)	**<0.001**
Community COVID-19 Outreaches				
Yes	1	80 (58.39)	1.00	
No	81 (32.79)	166 (67.21)	1.28 (1.14-1.44)	**<0.001**

CI = Confidence Interval, APR = Adjusted Prevalence Ratio, P-Value is Significant at 0.05 level

DISCUSSION

The Prevalence of COVID-19 Screening Among Patients Attending OPD Services at Lira Regional Referral Hospital, Lira District Northern Uganda

This study showed that the prevalence of COVID-19 screening was 64.06%. As far as COVID-19 screening is concerned; after the outbreak of COVID-19, the WHO swiftly established advice intended to meet the prerequisite of patients presenting with mild symptoms suspected to be infected with SARS-CoV-2 [26]. However, due to understaffing of healthcare workers in some health facilities, some of those guidelines were not followed to the dot [27]. That could be the reason why the prevalence of COVID-19 screening at our study site was only 64.06%. The prevalence of COVID-19 screening found in the present study is lower than what was found in Switzerland [28]. The possible reason for the discrepancy in study findings could be that screening in the previous study was performed according to the criteria recommended by the Swiss Federal Health Agency [28]. Failure to do screening for COVID-19 on some individuals visiting health facilities creates a possibility that people infected previously might harbour the same antigenic genomic sequence as that of SARS-CoV-2 with humoral immunity or antibodies [29, 30]. However, silent transmission or asymptomatic transmission has importance regarding community health stability since it is not possible to identify suspected cases through the process of screening. The 64.06% prevalence of COVID-19 screening which was found in the present study shows that there were loopholes at Lira regional referral hospital as far as COVID-19 screening is concerned. This is an implication that despite the exceptional measures being implemented by the relevant authorities in battling the outbreak, the achievement or miscarriage of these struggles mainly depends on practices exhibited by both the public and the health workers. Precisely, adherence of both the healthcare workers and the public to preventive strategies set up by the government is of key significance in preventing and slowing the rate at which the disease is spread [31]. The practice of health workers could possibly be influenced by their knowledge and attitudes to COVID-19 [32]. Therefore, the prevalence of COVID-19 screening at our study site might have been low because of the inadequate level of knowledge and the unfavourable attitude of the health workers towards COVID-19 screening. As opposed to the findings of the present study, the results of an online cross-sectional study done among the public of the Kingdom of Saudi Arabia revealed that the study participants were exhibiting good practices of COVID-19 screening with the mean score for practices being4.34, SD of 0.87 and range of 0–5 [33]. The disagreement in the study findings can be explained by the variations in the study designs as well as the sampling techniques employed. The prevalence of COVID-19 screening found in the present study was low compared to the results of a study conducted in the Philippines which showed that the COVID 19 screeningwas the most common practice geared towards the prevention of COVID-19 as 89.9% of respondents had been screened [34]. Furthermore, the result of the present study is not in agreement with the findings of a study carried out in Nepal which revealed that the majority of the study participants had taken precautions like going for COVID-19 screening so as to prevent being infected by COVID-19 [35]. The disagreement in the study findings can be explained by the differences in the study settings. The prevalence of COVID-19 screening in the present study is lower than what was found in a study conducted by [12] among healthcare workers in 4 different teaching hospitals affiliated with Makerere University which revealed that

74% had good practices towards COVID-19 such as screening their patients for COVID 19. Whereas the previous study was conducted in 4 different teaching hospitals, the present study was conducted in only one tertiary hospital. This could be the reason for the discrepancy in the study findings. Another possible reason for the low prevalence of COVID-19 screening at the study site could be because of the limitation in supplies required to do COVID-19 screening. A study was conducted to determine the effectiveness of thermal screening in the detection of COVID-19 among truck drivers at Mutukula Land Point of Entry, Uganda. Results of the study showed that the use of the thermal screening approach alone is ineffective in the detection of COVID-19 ina resource-limited setting [36].

The Socio-Demographic Factors Affecting COVID-19 Screening Among PatientsAttending OPD Services at Lira Regional Referral Hospital

After doing a multivariate analysis to adjust for confounders, the results of the present study revealed that Education level was the only sociodemographic factor associated with COVID-19 Screening among patients attending OPD Services at Lira Regional Referral Hospital. Participants who had primary education were 1.31 times more likely to be screened for COVID-19 compared to those who were not educated. Study participants who had secondary education were 1.31 times more likely to be screened than those who were uneducated and participants with Tertiary were 1.38 times more likely to be screened as compared to their counterparts who were not educated. The finding of the present study is in line with the results of a facility-based study done in Brazil which revealed that the level of education can affect COVID-19 screening either positively or negatively [37]. Much as the previous study was done in a developed country, the present study was conducted in a developing country but the findings are still similar probably because education has been known to shape the practices of individuals. The result of the present study is not in line with the results of a study done by [38] who explored the relationship between socio-demographic factors, using a rich panel data set covering 80 countries and found a strong negative association between Covid-19 screening and education level. The possible reason for the discrepancy in study findings could be because of the difference in the sample sizes as well as the variation in study designs. Other researchers, such as [39, 40, 41] established positive associations between educational level and COVID-19 screening. More broadly, the present study relates to a vast literature studying how education level was associated with health and health behaviours. While our contribution narrowed down to a very specific context, the Covid-19 pandemic, it is noteworthy that many of the same relationships found in other health contexts were evident in this study [42, 43]. In other words, well-documented socio-demographic differences in health behaviours and resulting health disparities extend to the current pandemic [44]. This provides evidence that certain behaviour such as screening for positive cases during a pandemic are linked to education level. In the current context, the tension between personal behaviour which is acceptance to go for COVID-19 screening and public health is exacerbated by the fact that perceptions about COVID-19 screening may be nurtured by certain socio-demographic factors such as level of education.

The Health System Factors Affecting COVID-19 Screening among Patients AttendingOPD Services at Lira Regional Referral Hospital, Lira District Northern Uganda

This study showed that Perceived Understaffing and Community COVID-19 Outreaches were the health system-related factors associated with COVID-19 Screening among Patients Attending OPD Services at Lira Regional Referral

Hospital. Perceived Understaffing: Study participants who said that the hospital was not understaffed were 1.31 times more likely to be screened for COVID-19 than those who said that the hospitalwas understaffed. The finding of the present study is in agreement with the results of a previous study which showed that heavy workload on health workers and understaffing in health facilities hinder the progress of COVID-19 screening as health workers have to also handle patients with other medical conditions and morbidities [45-54]. Furthermore, the relatively low case fatality rate of COVID-19, at least compared to Ebola, poses challenges to adherence making the majority of people reluctant to go for screening [46]. Maintaining appropriate staffing in healthcare facilities is essential to providing a safe work environment for healthcare providers (HCP) and safe patient care. As the COVID-19 pandemic progressed, staffing shortages occurred due to healthcare provider exposures, illness, or the need to care for family members at home [47]. Healthcare facilities had to be prepared for potential staffing shortages and should have planned and put processes in placeto mitigate these shortages [46]. These plans and processes should have included communicating with HCP about actions the facility was taking to address shortages, maintaining patient and HCP safety, and providing resources to assist HCP with anxiety and stress. Community COVID-19 outreaches: Study participants who said that there were no COVID-19 outreaches in their community were 1.28 times more likely to be screened than their counterparts who said that there were COVID-19 outreaches in their community. The containment of an infectious disease with large public health consequences relies on case identification, contact tracing, and isolation [48-54] and screening for suspected cases is the beginning point of all these processes. Community COVID-19 outreaches were affected by the issue of financing. In the wake of COVID-19 in Uganda, funds for surveillance, sample collection, and contact tracing for districts were channelled through local governments which implies that if funds got mishandled along the chain it could greatly affect COVID-19 screening within the facilities [49]. Important challenges impeded full implementation of COVID-19 preparedness and response activities such as screening forCOVID-19 within the community and within health facilities [49].

CONCLUSION

The study has shown that the prevalence of COVID-19 screening was 64.06%, which means that 35.94% of patients who visited OPD during the study period were not screened for COVID-19. Education level, Perceived Understaffing and Community COVID-19 Outreaches were independently associated with COVID-19 Screening among OPD patients at Lira Regional Referral Hospital.

Recommendations

Health workers should pay attention to the education level of the patients since this study has shown that being uneducated is linked to not being screened for COVID-19. Uneducated patients should be sensitized about the importance of COVID-19 screeningso as to increase their level of knowledge regarding COVID-19 screening. The number of healthcare workers screening patients for COVID-19 can be increased further by organizing continuous professional development workshops. Communities should be sensitized about the demerits of dodging COVID-19 screening and the need to embrace COVID-19 Screening. This can be done by bringing cultural leaders on board and working together with them to demystify the myths which communities hold against COVID-19 screening.

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