Willingness of Adult Antiretroviral Treatment Users to Communicate Concerning their Health Issue for Health Care Providers Using Phone Call and Associated Factors in University of Gondar Comprehensive Specialized Referral Hospital

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ABSTRACT

Background: Phone call communication with anti-retroviral users and health care provider improve health and quality of care.

Objectives: This study was conducted to describe proportion of willing adult ART user patients to communicate with their health care provider using phone call concerning health issue and associated factors in university of Gondar comprehensive specialized referral hospital.

Methods: Cross-sectional study was conducted. Participants were interviewed face to face from university of Gondar comprehensive specialized referral hospital. Bivariate and multivariate logistic regression was used to measure associations.

Results: A total of 402 study participants interviewed and their medical records reviewed from their chart. The proportion of anti-retroviral users willing ness to phone call communication with health care provider concerning on their health issue was 79.6% with (95% CI, 75.9-83.3), using logistic regression multivariate analysis on SPSS male sex, presence of network, presence of media at home, patients who have comorbidity were positively independent predictors whereas patients who developed anti–retro viral drug toxicity were negatively independent predictors to the willingness of the patients to communicate with health care provider concerning on their heath issue.

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Conclusion: Willingness of the patients to communicate with the health care provider about their health issue is high in this study. Male sex, presence of network, and presence of media at home, Patients who have comorbidity were positively independent predictors to willing the patients, so this promised to health care institutions to initiate these new types of care provision for those patients.

Keywords: Willingness; Phone call; Health care provider; Gondar; Proportion; Predictors; Cross sectional study

Abbreviations: AIDS: Acquired Immunodeficiency Syndrome; AOR: Adjusted Odds Ratio; ART: Anti-Retroviral Treatment; ASM: Appointment Spacing Management; BMI: Body Mass Index; CD4: Cluster of Differentiation of t-lymphocyte cells; CI: Confidence Interval; COR: Crude Odds Ratio; CPT: Cotrimoxazole Preventive Therapy; DSM: Differentiated Service Delivery; FTAR: Fast Tracking Anti-retroviral Refill; HEP-CAG: Health Extension Profession Community Anti-retroviral refill Group; HIV: Human Immunodeficiency Virus; INH: Isoniazid; IQR: Interquartile Range; MOH: Ministry of Health; OI: Opportunistic Infection; PCAG: Peer lead Community Anti-retroviral distribution; PLWHIV: People Living With Human Immunodeficiency Virus; SMS: Short Message Service; SPSS: Statistical Package for Social Science; TB: Tuberculosis; UOG: University of Gondar; WHO: World Health Organization

INTRODUCTION

The Human Immunodeficiency Virus (HIV) is retro viral pandemic infectious diseases, does not only upset the health of individuals but also impacts on households, communities, and the development of nations. When countries are affected by HIV, they also suffer from other infectious diseases due to immunosuppression effects, food in security scarcity, and related psychosocial serious problems. It is none curable human to human transmittable infection [1].

Antiretroviral therapy has an impressive clinical effect in that it decreases the viral replication and viral load which in turn preserves the CD4 level, decreases the progress of AIDS, and reduces AIDS related deaths. Antiretroviral therapy has transformed HIV infection into a chronic manageable disease; it requires near perfect adherence rates (as high as 95%). WHO defines treatment adherence as "the extent to which a person's behavior taking medications, following a diet and/or executing lifestyle change–corresponds with agreed recommendations from a health care provider" for ART, a high level of sustained adherence is necessary to suppress viral replication and improve immunological and clinical outcomes; decrease the risk of developing Antiretroviral (ARV) drug resistance; and reduce the risk of transmitting HI. Anti-Retroviral Treatment (ART) is a lifelong treatment, based on the patients' health condition needs standardized appointment schedule for treatment refill, but as national anti-retroviral guideline recommendation patients who have any health seeking commonly come to the clinic for further evaluation. As we had seen in the clinic most of the patients come from the far area has health related complaints solved using simple counselling [2]. Different studies remind repeated health seeking patients exposed to other communicable diseases, fatigue, and economical scarce and poor adherence [3,4]. Currently including developing countries patients with lifelong treatment showed interest to use health technology both in clinical and community health care service [5,6]. In Ethiopia to reduce the patients repeatedly visit health facility, nationally differentiated

Delivery Service Model (DSM) was initiated for eligible patients including Appointment Spacing Management (ASM), Fast Tracking Anti-retroviral Refill (FTAR) Health Extension Professional Community Anti-retroviral Refill Group (HEP-CAG), Peer lead Community Anti-retroviral Distribution (PCAD) approaches The main reason to do this research was to address the gaps seen in ART users health seeking and the service delivery system were not yet used two way communication between patients and health care provider concurring the patients' health related issue before coming the health institution. There for the final result of this research will be important to health care provider, the community, the programmer and the individual who needs health care to use two way communication that increases the quality of care and reduce the cost [7].

OBJECTIVES

General Objective

To describe the proportion of willing adult ART user patients to communicate concerning their health issues for health care provider using phone call and associated factors in university of Gondar comprehensive specialized referral hospital.

Specific Objectives

- To identify proportion of willing adult ART user patients to communicate their health care provider using phone call concerning health issues.

- To determine factors related to cell phone communication to anti-retroviral treatment users patients with health care providers about their health issue.

MATERIALS AND METHODS

Study Setting

Gondar university comprehensive specialized referral hospital provides different clinical care for the patients. The catchments those get the service in this hospital come from Gondar city, three zones, nearby districts of region. In addition to this patients referred from two zonal hospitals, five district hospitals, twenty five health centre and eight private clinics also provide the services. Chronic HIV/AIDS care and treatment services are available at university of Gondar comprehensive specialized referral hospital. Since 2005 to January 2019 total enrolled anti-retroviral users were around 15,000. The chronic HIV/AIDS care service includes screening and management of opportunistic diseases, address antiretroviral and supportive treatments adherence, early identification of drug adverse effect, mental health screening, prevention counselling and clinical profile monitoring services are routinely given. This study was not conducted yet as much as my searching effort everywhere [8-11].

Study Design and Period

A hospital based, cross-sectional study design was applied based on patient intake form review and interviewed the patients enrolled to anti-retroviral treatment from 2015 to 2019 in university of Gondar comprehensive specialized referral hospital.

Study Participants

The study participants were adult (age ≥ 18 years old) HIV infected who were enrolled in care and received ART care and treatment services at least once between January 1, 2015 and December 30, 2019 in the university of Gondar included.

Sample Size and Sampling Procedure

The sample size was determined by employing the following formula and assumptions: Single population formula $n=(z \ (\alpha/2)^2 \times p \ (1-P))/d^2$ 50% was taken due to unavailability of similar previous study.

"n"=Required sample size.

"Z"=Standard score corresponding to 95% confidence level.

"d"=Margin of error 5% and 10% allowance for non-responses was taken.

Accordingly, the required sample size is equal to 422. Patients interviewed by using simple random sampling technique.

Definition of Terms

Willingness of adult antiretroviral users to communicate with health care provider concerning their health issue with cell phone call: It is the acceptance of voluntary communication to health care provider when there is any health issue before coming the health care service area using cell phone call.

Non willingness of adult anti-retroviral users to communicate with health care provider concerning their health issue with cell phone call: Those adult ART users who were not voluntary for communication to health care provider when there is any health issue before came to the health care service area using cell phone call.

Presence of media at home: Availability of the media at home likes television or radio.

Data Collection Procedure

Prior to data collection structured English checklist was prepared and secondary data was extracted by review of patient medical records in follow up chart then patients interviewed by using local language prepared checklist.

Data Quality Control

Training on the objective of the study and how to review the documents as per the data extraction format and how interview the patients using local language was given to data collectors. The PI was supervising the overall process. Pre-test was done on 5% of the questionnaire.

Data Processing and Analysis

The data was entered in to EPI info version 7.2.1.0 and it was exported to SPSS version 20 statistical software for analysis. Descriptive and summary statistics was carried out using tables and chart. Both bi variable and multi variable logistic regression model was fitted to identify predictors of willingness HIV positive ART user patients to call for health care provider. Hosmer and Lemeshow fitness of goodness test was computed and it was found to be satisfactory, then logistic regression was used to compute adjusted odds ratio with a 95% Confidence Interval (CI) to see the presence of strength and the direction of association between dependent and independent variables by using SPSS. Variables having p value up to 0.2 in the bi variable analysis was fitted in to the multi variable model and finally, AOR with 95% CI in the multi-variable model was used to select variables which have significant predictors of ART users willingness to phone call for health care provider when they have health related issue [12].

RESULTS

Background Characteristics

A total of 402 patient medical records were reviewed and patients interviewed using structured checklist. Among those 246 (61%) were female, 290 (72.1) were urban dwellers and 208 (52.2%) were married. The median age at the time of enrollment was 40 years (IQR 32-48) (**Table 1**).

Agezew T, et al.

Table 1: Background characteristics of HIV/AIDS patients on ART at UOG Northwest Ethiopia from January 1, 2015 to December 30, 2019 (n=402).

Character	Frequency	Percent	Character	Frequency	Percent
Sex			**Presence of OIs**		
Female	246	61	Yes	323	80.3
Male	156	39	No	79	19.7
Age category			**Comorbidity**		
18-30 years	93	23.1	Yes	52	12.9
31-45 years	193	48	No	351	87.1
46-60 years	108	26.9	**Media available**		
>= 60 years	8	2	Yes	299	74.4
Marital status			No	103	25.6
Married	208	51.7	**Transport available**		
Single	61	15.2	Yes	369	91.8
Divorced		17.4	No	33	8.2
Widowed	59	14.7	**Preferred reminder**		
Others	4	1	Cell phone alarm	110	27.4
Level of educations			SMS	84	20.9
			Watch	132	32.8
No educated	96	23.9	Others	76	18.9
Informal educated	31	7.7	**Social support**		
Primary 1-8	50	12.4	Yes	127	31.6
Secondary 9-12	104	25.9	No	275	68.4
Tertiary>=12	121	30.1			
Occupation			**Base line functional status**		
Unemployment	149	37.1	Working	229	57
Housewife	101	25.1	Ambulating	132	32.8
Private	20	5	Bedridden	41	10.2
Government	66	16.5	**INH supply**		
None government	66	16.5	Supplied	253	62.9
Religion			Not Supplied	149	37.1
Orthodox	334	83.1	**ART regimen**		
Muslim	57	14.2	Single	155	38.6
Protestant	2	0.5	Double	247	61.4
Catholic	9	2.5	**Base line CD4**		
Residence			<100 cell/m^3	95	23.6

Variable	n	%	Variable	n	%
Urban	290	72.1	>=100 cell/m^3	307	76.4
Rural	112	27.9	**Base line WHO stage**		
Monthly income			Stage-1	38	9.5
<1000 birr	252	62	Stage-2	116	28.9
>=1000 birr	150	38	Stage-3	212	52.7
Distance from the center			Stage-4	36	9
<10 km	222	55.2	**Base line BMI**		
>=10 km	180	44.6	<18.5 kg/h^2	124	30.8
Owner of cell phone			>=18.5 kg/h^2	278	69.2
Yes	399	99.3	**First viral load**		
No		0.7	Non detected	204	50.7
Type of phone			<1000	113	28.2
Simple		89.3	>=1000	85	21.1
Smart		10	**ART toxicity**		
Always functional phone			Yes	335	83.3
Yes		82	No	67	16.7
No		17.3	**ART duration**		
Power supply			1 year	83	20.6
Available		89.8	1-2 years	177	44.1
Not available		10.2	>2 years	142	35.3
Disclosure status			**CPT provision**		
Disclosed		17.4	Yes	117	29
None disclosed		67.6	No	285	71
Adherence status			**Substance abuse**		
Adherent		84.8	Yes	70	17.4
None adherent		15.2	No	332	82.6
Availability of net work					
Yes	369	91.8			
No	33	8.2			

Proportion and Related Factors of ART Users Willing to Communicate with Health Care Provider Concerning their Health Issue

Based on national ART guideline and WHO ART guideline recommendation HIV infected patients who have health issue concern should have contact to health care provider. Commonly in our set up HIV infected patients with health issue came to the health care service institution, but most of the patients came to the health care service complained which needs simple reassurance and simple counseling.

HIV infected patients repeated visiting of the health care service provision area are vulnerable for infectious diseases like COVID-19. Filter the patients using phone call who have been seen at health institution and patients who need simple reassurance and counseling is mandatory. So willing to communicate with health care provider concerning their health issue has taken as the study subject event. Because opportunistic infections are the main to be addressed immediately in HIV care and support service. In our set up when we reviewed the patient medical records and interviewed patients willing to communicate with health care provider concerning their health issue proportion was 79.6%. 9% with 95% confidence interval of (95% CI, 75.6-83.6). Determination of the relationship of the factors to the event, those sex, base line BMI, base line CD4, presence of OIs, presence of cell phone, SMS reading ability, first viral load, drug toxicity, anti-retroviral treatment duration, presence of network, presence of comorbidity, presence of media at

home, presence of transport, anti-retroviral treatment frequency satisfied crosstab assumption and have p. value <=0.2 also included in to multiple analysis. Among all variables with multivariate logistic regression analysis some were significantly predictor of willing to communicate with health care provider concerning their health issue. Males were AOR, 2.23 (95% CI, 1.24-4.20) times more likely willing to communicate with health care provider concerning their health issue than females. Availability of cell phone network was AOR, 5.12 (95% CI, 1.18-22.28) times more likely willing to communicate with health care provider concerning their health issue than cell phone network unavailability. Presence of media at home was AOR, 2.24 (95% CI, 1.08-4.65) times more likely willing to communicate with health care provider concerning their health issue than media in availability at home. ART user patients who have comorbidity were AOR, 2.57 (95% CI, 1.22-5.44) times more likely willing to communicate with health care provider concerning their health issue than ART user patients who have no comorbidity. Patients who developed anti-retroviral treatment drug toxicity were AOR, 0.34 (95% CI, 0.16-0.8) 66% times less likely willing to communicate with health care provider concerning their health issue than patients who have no anti-retroviral treatment drug toxicity (**Table 2**).

Table 2: Bivariable and multivariable factors of willing to communicate with health care provider concerning their health issues among HIV positive adult, attending care and treatment in university of Gondar referral hospital, Northwest Ethiopia from Jan 1, 2015 to Dec 30, 2019 (n=402).

Variables	COR	AOR	95% CI
Sex			
Female	1		
Male	1.9	2.23	1.24-4.20
Base line BMI			
<18 kg/h^2	1		
$>=18$ kg/h^2	2.2	0.61	0.32-1.13
Base line CD4			
<100	0.4	0.53	0.27-1.05
>=100	1		
Presence of OI			
Yes	1.8	1.42	0.63-3.23
No	1		
Presence of cell phone			
Yes	1.4	0.9	0.53-1.71
No	1		

SMS reading ability			
No	1		
Yes	2.9	1.54	0.82-2.93
First viral load			
Not detected	1		
<1000 copies/ml	0.6	0.73	0.38-1.41
>1000 copies/ml	0.5	0.79	0.38-1.48
Drug toxicity			
No	1		
Yes	0.5	0.34	0.16-0.8
ART duration			
<1 years	0.3	0.59	0.27-1.36
1-2 years	0.4	0.51	0.26-1.04
>2 years	1		
Presence of network			
Yes	3,4	5.12	1.18-22.28
No	1		
Presence of comorbidity			
No	1		
Yes	0.4	2.57	1.22-5.44
Presence of media at home			
Yes	2.8	2.24	1.08-4.65
No	1		
Presence of transport			
Yes	2	0.37	0.08-1.68
No	1		
Drug frequency			
Single	1		
Double	1.2	1.31	0.71-2.21

DISCUSSION

Research focusing on the identifying and treatment of opportunistic infections which affects the outcome of the antiretroviral treatment is being strongly supported by various international public health agencies. In resource limited settings, in particular, supportive treatment promising possibilities in addressing current HIV related health care services to reduce mortality and morbidity of the HIV infected individuals. HIV infected patients repeated visiting of the health care service provision area are vulnerable for infectious diseases like COVID-19. To filter the patients who have been seen at health institution and patients who need simple reassurance and counseling are basic to care. So adult anti-retroviral treatment users willing to communicate with health care provider concerning their health issue has taken as the study subject event. This study assessed the proportion and predictor factors of adult anti-retroviral treatment users

willing to communicate with health care provider concerning their health issue in university of Gondar specialized hospital.

Proportion of adult anti-retroviral treatment users willing to communicate with health care provider concerning their health issue was 79.6%. 9% with 95% confidence interval of (95% CI, 75.6-83.6) indicate most of them were interested to use mobile technology to their health related service is inline the study done in Australia. Might be due to reduction of the stigma and discrimination, fear of acquiring opportunistic infection, transportation cost, needs life modification, to know drug related conditions, to remind the next appointment schedule if for gated.

Among all variables with multivariate logistic regression analysis some were significantly predictor of willing to communicate with health care provider concerning their health issue. Being males were leading for willingness to communicate with health care provider concerning their health related issues. This might be due to socio-economic difference, cultural influence, stigma and discriminations, opportunistic infections. Availability of cell phone network was indicated to willing the anti-retroviral treatment users to communicate with health care provider on phone call concerning their health issues which is inline the study done in Kenya and America. In fact might be direct related timely needs to communicate with health care provider. The presence of media at home was motivated willingness of anti-retroviral users to communicate with health care provider using phone call when they have concern related to their health issue that might be related to the increased information to understand the importance of phone call technology for health care. Presence of comorbidity in anti-retroviral treatment users also showed willing to communicate with health care provider on phone call concerning their health issues which is inline the study done in Ethiopia and Nigeria. That might be due to double health issue concerning, drug related condition, life modification and cost minimization. Patients who developed anti-retroviral treatment drug toxicity were not willing to communicate with health care provider concerning their health issues was inline the study done in Ethiopia. Might be due to they need treatment modification.

CONCLUSION

Our primary finding proportion of adult anti-retroviral treatment users willingness to communicate with health care provider about their health issues were high. Being male, cell phone network availability, presence of media at home, Presence of comorbidity and development of drug toxicity were significant predictors. Health care provider needs strengthen health education to increase the patient and health care providers two way communication. Health administrators are encouraged to establish cell phone communication health care system. Patients who are on lifelong treatment advised to use cell phone technology for their health issues.

ETHICS APPROVAL AND CONSENT

Clearance was obtained from institutional review board of university of Gondar. Permission letter was received from the hospitals administration and the ART clinic focal persons in UOG. All interviewed participants gave consent to participate in the research, questionnaires kept securely in locked cabinets and rooms and the data base entered into soft wares was password protected.

CONSENT FOR PUBLICATION

Not applicable.

AVAILABILITY OF DATA AND MATERIALS

The datasets used and/or analyzed to this research are available from the corresponding author. Data which was relevant for this study included in the manuscript.

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COMPETING INTEREST

The authors declared that have no competing interest

AUTHOR'S CONTRIBUTIONS

TA made substantial contributions to conception and design, or acquisition of data, data collection supervision, data analysis, interpretation of data and preparation of the manuscript. KG agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. AT was involved in drafting the manuscript or revising it and has agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. GF was involved in drafting the manuscript or revising it critically for important intellectual content and have given final approval of the version to be published. All authors read and approved the final manuscript.

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