

COVID-19 Prevention Practices Among Prisoners, in Southern Ethiopia

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Background: Coronavirus disease-19 (COVID-19) is a highly contagious disease with high attack and case fatality rate. Since WHO's declaration of disease as pandemic in March 2020, the unprecedented global crises have been happening. To curb and reduce such crises, multi-dimensional international efforts have been made, particularly, infection prevention measures has been developed. However, there was a wide gap of implementing COVID-19 prevention measures from rural to urban, from institution to institution and from person to person. Therefore, the aim of this study was to measure the level of prevention practice towards COVID 19 and associated factors in prison, in Sidama National Regional State, Ethiopia.

Methods: A cross-sectional study using quantitative method of data collection was conducted in November, 2020 among 422 prisoners in two prisons. Data were collected by trained nurses using structured questionnaires. We analyzed data using SPSS version 24 software. Descriptive statistics and bivariable and multivariable logistic regression analyses were employed to identify factors associated with prevention practices of COVID-19.

Results: More than one-fifth (22%; 95% CI: 19%, 26%) of respondents had good preventive practice. Participants who had a history of alcohol intake were 1.79 times less likely to implement good preventive practice for COVID-19 (AOR = 1.79; 95% CI; 1.09, 2.93). The respondents who had negative attitude towards COVID-19 infection were 1.69 times more likely to have poor prevention practice (AOR = 1.69; 95% CI: 1.02, 2.81).

Conclusion and Recommendation: In this study, COVID-19 prevention practice among prisoners was very low. Negative attitude and previous alcohol taking history were factors associated with poor prevention practice. Accordingly, the researchers recommends to the concerned body to design educational intervention to change the attitude towards COVID-19 and other infectious diseases and behaviors of the prisoners.

Keywords: COVID-19, prevention practice, prison, Sidama, Ethiopia

Background

Coronavirus disease-19 (COVID-19) is a disease caused by a new strain of coronavirus. The virus is linked to the same family of viruses as severe acute respiratory syndrome (SARS) and some types of common cold. COVID-19 manifestation includes but is not limited to fever, cough and shortness of breath. In more complicated cases, the infection can cause pneumonia or breathing difficulties.¹ Touching the contaminated surface and body of infected person, direct contact with the respiratory droplet of an infected person during and after coughing and sneezing is its means of transmission.²

As of February 3, 2022, globally there were 391,393,876 COVID-19 confirmed cases, 310,264,020 recoveries and 5,743,921 deaths.³ In Africa in the same period, there were 11,164,044 COVID-19 confirmed cases, 10,017,825 recoveries and 241,317 deaths.³ Similarly, as of February 3, 2022 Ethiopia had 466,289 confirmed cases, 400,374 recoveries and 7355 deaths.⁴

Since COVID-19's declaration as a Public Health Emergency of International Concern (PHEIC) in March, 2020, the virus has spread to almost all countries of the world. Among many factors, poor hand cleanliness, congestion in the same area, and bodily contacts like handshaking contributed for the fast spread of the virus within minimal period of time. The World Health Organization (WHO) recommends widely inform the public about the cause and, mode of transmission of the disease, and simple prevention methods such as hand washing with soap or use of hand sanitizers, maintaining social distance, and reducing social contact to slow down the fast spread of virus. Additionally, case detection, contact tracing, and quarantines and other community level measures are recommended actions to reduce wide spread COVID-19.^{2,5}

Global surveillance system established by WHO with partners in January, 2020 contributed much in gathering standardized data at global, regional and country levels.⁶ It is also stated that the challenges to respond to COVID-19 in detentions like prisons requires collaborative actions of government and the whole society. This is because people in prisons are already affected of their freedom and may respond differently to further restrictive measures imposed upon them.⁷ WHO in its interim guideline recommends that all staff and people in prisons and other places of detention should have comprehensive awareness of COVID-19 prevention strategies, including adherence to hand hygiene measures, respiratory etiquette (covering coughs and sneezes), physical distancing (maintaining a distance of at least one meter from others), being alert to signs and symptoms of COVID-19, and staying away from ill people.⁷ Furthermore, since all regions of the world are at risk to COVID-19, each country is encouraged to be ready to respond in line with the global Strategic Preparedness and Response Plan.⁸

Ethiopia set up a Ministerial Committee led by the Prime Minister on March 16, 2020, to control COVID-19; the committee announced postponement of large gatherings and meetings including sporting events, wedding and funeral ceremonies, limiting religious institutions and places of worship to limit gatherings and a total closure of all public and private schools including the higher learning. Moreover, the federal government adopted a COVID-19 control implementation regulation and declared state of emergency (SoE) in April, 2020 which was approved by the House of Peoples Representative (HoPR).⁹ As a result, public and private institutions installed hand washing stations. At work area each individual obligated to use face mask using slogan "NO MASK, NO SERVICE". More importantly, some individuals developed the behavior of sanitizer use before and after any procedure.

Despite efforts made to improve awareness and practice towards COVID-19 prevention, several studies showed that there are gaps in the implementation of prevention measures. A study conducted in Cameroon demonstrated that 61% of participants reduced their practice of avoiding crowded areas, using facemasks, keeping hand hygiene, using hand sanitizers and eating fruits.¹⁰ Similarly, study conducted in Malaysia reported that study participants have been avoiding crowded areas (83%), practiced proper hand hygiene (88%) and wearing of face masks (51%).¹¹ Another study conducted in Pakistan revealed that study respondents wash hands frequently (85%), wash hands before eating (60%), wash hands after coming home (93%), cover their face when sneezing or coughing (50%), and practiced maintaining a safe physical distance (93%).¹² Practice related evidence from Bangladesh also showed that 55% of participants increased hand hygiene, while 98% of them wore a face mask in crowded places, 99% of them agreed to inform a suspected case to health authorities, and 94% of them implemented washing hands with soap and water.¹³ As to Ethiopia, evidence showed that COVID-19 prevention practice was 16% in Gondar, 62% in Amhara regional online study, 49% in Addis Ababa online study, 41% among Dire Dawa residents, 42% among residents in Dessie.¹⁴⁻¹⁸

There is no study done on disease prevention practice among prisoners nationally in general and regional in particular. Thus, we aimed to measure the level of prevention practice and associated factors towards COVID 19 among prisoners in Sidama National Regional State, Ethiopia.

Methods

Study Design and Area

We conducted a cross-sectional study survey in November, 2020 in two Prisons (Yirgalem and Hawassa) of Sidama Region, Southern Ethiopia.

Sample Size and Sampling Procedure

A sample size formula to estimate a single population proportion was used to calculate sample size. After adding 10% of non-response rate on 384, the final sample size became 420.

Two major prisons (Yirgalem and Hawassa) were included purposively and study participants were selected randomly using prisoners register as a sampling frame.

Data Collection Tool and Procedure

Data was collected using structured questionnaire developed based on the review of the literature including WHO's directives.^{4,5,7,11,12,16} The questionnaire sections on socio-demographic, behavioral including attitude and other features of the participants, and COVID-19 prevention measures practice. It was initially designed in English and then translated to local language (Sidamu Afoo and Amharic) and back to English to check the consistency. We checked the reliability of questionnaire related to attitude and practice using Cronbach's Alpha test and values were 0.844 and 0.652 respectively. In addition it was also checked for its validity using Pearson's correlation test and all items were significant. This value for each item was greater than critical value at 0.05. Finally, data were collected by four trained nurses using pretested and validated questioners and supervised by two trained supervisors. During data collection, the WHO's recommendations to prevent COVID-19 (social distance and the use of personal protective equipment) was strictly implemented. To check consistency and accuracy of the collected data it was checked on daily basis.

Measurement and Operational Definition

The outcome variable was practice of COVID-19 Prevention measures (Good /Poor practice) which was measured using seven questions with dichotomous options (0=No, 1=Yes). Then, those participants who scored 3 and less of the seven were regarded as having poor practice of COVID-19 prevention measures, and those who scored 4 and more were considered as they have good practice.

The independent variable included were socio-demographic variables (age, sex, education, religion and marital status) and behavior factors such as history of alcohol consumption, history of chronic illness and attitude towards COVID-19.¹⁹ Three dichotomous questions (Yes/No) were used to assess the attitude of the respondents towards COVID-19. Each question given 0 and 1(0 =No and 1 = Yes). Then, those participants who agreed that COVID-19 is fatal, he/she is at risk of it and each individual should use prevention measure were considered as they had positive attitude and those disagree any one of these were considered as they had negative attitude.

Data Processing and Analyzing

After data entered in to Epi Data entry software, cleaning and analyzing was done using statistical package for the social sciences (SPSS) version 24. Statistical Parameters like frequency, proportion, mean, and standard deviation were computed to describe the socio-demographic and other characteristics of study participants. The multivariable logistic regression model was used to assess the factors associated with poor practice towards COVID-19 prevention measures. The variables under bivariable analysis with P -value < 0.25 were entered in multivariable logistic regression to control confounders and to identify predictors of COVID-19 prevention practice.¹⁹ Hosmer and Lemeshow's goodness-of-fit was used to assess whether they fulfilled the assumption. Adjusted Odds Ratio (AOR) with 95% confidence interval (CI) at P -value < 0.05 was used to report the predictors of COVID-19 prevention practices.

Result

Socio-Demographic Characteristics of the Respondents

Out of 422 study participants, 420 (99%) participated in the study and from which 403 (96%) were male. Regarding the ages of the participants, 324 (77%) was in the age group of 19–45 years old. Two hundred sixty-six (63%) participants can read and write while 27 (6%) had attended College and above. Regarding the religion and marital status of the study participants, 303 (72%) and 246 (58%) were protestant and married respectively (Table 1).

Table 1 Socio-Demographic Characteristics of the Respondents, in Prison, Sidama, Ethiopia, November, 2020

Variable	Category	Frequency	Percentage
Age (year)	<18	35	8.3
	19–45	324	77.1
	>45	61	14.5
Sex	Male	403	95.7
	Female	17	4.0
Marital status	Single	174	41.4
	Married	246	58.4
Religion	Christian	352	85.0
	Muslim	21	5.0
	Other	42	10.0
Educational status	Cannot read and write	32	7.6
	Can read and write	266	63.3
	Primary and secondary school	95	22.6
	College and above	27	6.4

Attitude Towards COVID-19 and Chronic Health Characteristics of the Respondents

From the total of 420 study participants, 57 (14%) had history of chronic illness. Three respondents reported having more than one chronic illness. The common chronic illness among the study participants was hypertension, 25 (6%). They were also asked for the history of alcohol drink and 122 (29%) had history of drinking alcohol and the remaining 298 (71%) had no history of drinking alcohol. Participants were assessed for how they perceive the COVID-19 and 165 (39%) responded had negative attitude.

Prevention Practice Towards COVID 19 Among the Respondents

From the all participants, 191 (45%), 106 (25%), 34 (8%), 9 (2%) reported as they wash their hands frequently, use face mask always, use disinfectants frequently and keep one meter of social distance respectively as to prevent COVID-19 infection in prison (Table 2).

Among all participants, while 326 (78%; 95% CI: 74%, 81%) participants had poor preventive practice to wards COVID-19, the 94 (22%; 95% CI: 19%, 26%) had good preventive practice.

Factors Associated with the COVID-19 Prevention Practices

Under binary logistic regression analysis; age, sex, marital status, attitude towards COVID-19, and history of alcohol intake of the participant were associated with prevention practice of the participants towards the infection.

In multivariable logistic regression analysis, history of alcohol taking (AOR= 1.79; 95% CI: 1.09, 2.93) and negative attitude (AOR= 1.69; 95% CI: 1.02, 2.81) towards COVID-19 were significantly associated with prevention practice of the respondents. However, all socio-demographic variables did not associated with COVID-19 prevention practices among the study participants (Table 3).

Table 2 Prevention Practice of Respondents to COVID-19 Prevention Measures, in Prison, Sidama, Ethiopia, November, 2020

COVID-19 Preventive Measures	Responses	Frequency (n)	Percentage (%)
Frequent hand washing	Wash frequently	191	45.5
	Not wash frequently	229	54.5
Use of face mask	Using face mask	106	25.2
	Not using face mask	314	74.8
Use of disinfectants	Using disinfectants	34	8.1
	Not using disinfectants	386	91.9
Social distance of at least one meter	Keeping social distance	9	2.1
	Not keep social distance	411	97.9
Avoid touching mouth, nose and eyes with unclean hands	Yes avoid touching	135	32.1
	Not avoid touching	285	67.9
Avoid hand shake, hug and kissing	Yes avoid touching	157	37.4
	Not avoid touching	263	62.6
Personal hygiene	More frequently	103	24.5
	Not frequently	317	75.5
Overall prevention practice	Good prevention practice	94	22.4
	Poor prevention practice	326	77.6

Discussion

The prevalence of poor practice among respondents towards COVID-19 was found to be 78% (95% CI: 74%, 81%). This result was similar with findings of the study conducted among the residents of the southern region of the country.²⁰ Similarly, it was in line with the findings of the study conducted in Gondar town (74%).¹⁴ More importantly, this finding is in support with statement of the WHO that inmates have poorer hygiene and weak immunity due to stress and poorer nutrition.²¹ Most prisoners are gathered from general populations which possibly justify the similarity of the study results. On the other hand, this finding was higher compared to the findings of the prevention practice related studies in Cameron (39%), Malaysia (26%), in Dessie (42%) in Addis Ababa (49%).^{10,11,16,18} The possible explanation for this could be study settings, current study conducted in Prison where the fully implementation of COVID-19 prevention measures likely difficult due to setting and the behavior of the prisoners. Our study indicated that only 22% of the study participants had practiced COVID-19 prevention measures correctly and consistently. In addition it was evidenced that the response to COVID-19 in such places like prison is challenging and requires whole-government-societal approach.⁷ Furthermore, healthcare service existing in prisons needs to be strengthening so that health education and counseling focused service could change the negative attitude and behavior of the prisoners.

This study reveals that the participant's history of alcohol intake and their negative attitude towards COVID-19 was significantly associated with prevention practice of the respondents. Comparing the participants who have positive attitude, the respondents who had negative attitude towards Covid-19 infection were 1.69 times more likely to have poor prevention practice, (AOR= 1.69; 95% CI; 1.02, 2.81). This finding was supported by the finding of study conducted in north-east Ethiopia (among Dessie residents).¹⁸ Similarly study conducted in Egypt supports this finding as people with positive attitude towards COVID-19 prevention measures limits the spread of disease through good practice of its prevention measures.²² Another similar study conducted in Dire-Dawa (a city east of Addis Ababa) concluded that respondents with positive attitude towards COVID-19 prevention were 3.87 times more likely to practice COVID-19 prevention measures compared to their

Table 3 Factors Associated with Prevention Practice Towards COVID 19 in Prison, Sidama Regional State, Ethiopia, November, 2020

Variables	Categories	Level of Prevention Practice		COR	AOR
		Poor Practice	Good Practice		
Age (year)	<18	30(7.1)	5(1.2%)	1	
	19–45	253(60.2%)	71(16.9%)	0.59(0.22, 1.58)	0.58(0.21, 1.64)
	>45	43(10.2%)	18(4.3%)	0.39(0.13, 1.19)*	0.51(0.15, 1.67)
Sex	Male	316(75.2%)	87(20.7%)	2.54(0.94, 6.87)*	2.63(0.94, 7.37)
	Female	10(2.4%)	7(1.7%)	1	
Religion	Christian	276(65.7%)	81(19.3%)	0.88(0.45, 1.71)	
	Muslim & other	50(11.9%)	13(3.1%)	1	
Marital Status	Single	142(33.8%)	32(7.6%)	1	1
	Married	180(42.9%)	62(14.8)	0.63(0.38, 1.02)*	0.72(0.42, 1.24)
Attitude	Positive	189(74.1%)	66(25.9%)	1	1
	Negative	137(83.0%)	28(17.0%)	1.71(1.04, 2.79)*	1.69(1.02, 2.81)**
Experience of testing	Yes	154(36.7%)	52(12.4%)	1.25(0.79, 1.98)	
	No	172(41.0%)	42(10.0%)	1	
History of alcohol take	Yes	160(38.1%)	32(7.6%)	1.87(1.15, 3.01)*	1.79(1.09, 2.93)**
	No	166(39.5%)	62(14.8%)	1	1

Notes: *Indicates the association and **indicates that there was significant association with outcome variable.

counterparts.¹⁷ Furthermore, study conducted in Bangladesh reveals those respondents with positive attitude were 1.4 times more likely to implement prevention practice than their counterparts.¹³ Therefore, the healthcare professionals and other concerned body of the prison should work to change the attitude of the prisoners.

In this study the respondents who had history of alcohol intake 1.79 times less likely implement the COVID-19 prevention practice correctly and consistently, (AOR=1.79 (1.09, 2.94). This result was similar with findings of the study conducted among Dire-Dawa residents.¹⁷ Additionally, this finding is in line with WHO statement that Alcohol alters one's thoughts, judgment, decision-making and behavior. However, being cross-sectional nature of the study might affect the establishment of causal relationship of poor prevention practice and its associated factors.

Conclusion

In this Study, nearly three fourth of the participants had poor practice towards COVID-19 prevention measures. Negative attitude of the participant towards COVID-19 and participants' previous history of alcohol intake were predicting factors for poor practice of COVID-19 prevention measures.

The researchers recommend to the government, nongovernment organization and other concerned body to design educational intervention to change the attitude towards COVID-19 disease and behaviors of the prisoners.

Abbreviations

AOR, adjusted odds ratio; CoM, Council of Ministers; COR, crude odds ratio; COVID-19, corona virus disease 19; IRB, Institutional Review Board; PHEIC, Public Health Emergency international Concern; PPE, personal protective equipment; SNNPRS, Southern Nation Nationalities Peoples Regional State; WHO, World Health Organization.

Data Sharing Statement

Data is not available for online access, however readers who wish to gain access to the data can write to the corresponding author Nana Chea at cheanana2007@gmail.com.

Ethical Approval and Informed Consent

Ethical clearance was obtained from Hawassa University College of Medicine and Health Science, Institutional Review Board (IRB) and supportive letter were obtained from the Sidama Regional Health Bureau and Sidama Region police Commission Department and participating prison administrators. All participants were informed about the purpose, risks, benefit and confidentiality issues related to the study. Informed consent was directly obtained from study participants after they were briefed about the objectives of the study. Participation in the study was on voluntary bases and informed about the right not to participate or withdraw at any time without compromising COVID-19 prevention rules. This indicates that our study complies with the Declaration of Helsinki.²³

Acknowledgment

Firstly, our thanks goes to Hawassa University, Office of the Vice President for Research and Technology Transfer Research Programs Directorate, Police commission of the region and prison administrators for their support and providing necessary information. Moreover, we extend our thanks for the prisoners for the voluntarily participation in this study.

Author Contributions

All Authors made a significant contribution to the study work, reported, whether that is in the conception, study design, execution, acquisition of data, analysis, and interpretation, or all these areas; took part in drafting, revising or critically reviewing the article. They have agreed on the journal to which the article has been submitted, and have agreed to be accountable for all aspect of work.

Funding

Hawassa University.

Disclosure

The authors declare that they have no competing interests.

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