

Adherence towards COVID-19 prevention measures and associated factors in Hossana town, South Ethiopia, 2021

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Abstract

Introduction: The covid-19 disease is a pandemic threat for humanity's healthcare system, social, economic, and psychological well-being for both developed and developing nations. In the case of developing nations such as the resource of Ethiopia, however, the key obstacle is to buy the vaccine and administer it to their people.. In the study area, however, the degree of adherence to the covid-19 preventive measure was not well established. The aim of this study is to determine adherence to covid-19 prevention measures in Hossana town.

Methods: From 3 to 29 January 2021, a community-based cross-sectional study was conducted among individuals living in the Hosanna town. We used a sample size of 384. The sample size was distributed to all 8 kebeles in proportion to the size of the households contained in each kebele in the town of Hossana. Systematic sampling methods were used and both descriptive and advanced analysis, data was entered into Epi-data and exported to SPSS. Binary logistic regression was used to identify variables associated with adherence to preventive measures for covid-19.

Result: 50.4% of the study participants had good adherence with the COVID-19 preventive measures. 145 (38.5%) of all respondents had poor knowledge on COVID-19 preventive measures and 40.3 % had poor COVID-19 transmission methods knowledge. Age [AOR: 0.34; 95 % CI (0.131-0.912)], educational status [AOR: 0.32; 95% CI (0.165-0.632)], marital status [AOR: 2; % CI (1.191-3.803)], family size [AOR: 2.4; % CI (1.322-4.366)] and covid-19 complication [AOR: 0.49: 95% CI (0.242-0.979)] were significantly associated with covid-19 prevention measurement adherence in multivariate analysis.

Conclusion: This study found that approximately half of the participants had poor adherence to COVID-19 preventive measures. Factors associated with covid-19 preventive measures were age, educational age, marital status, family size, and heard about complication of COVID-19 were associated with preventive measures.

Key words: Covid-19, Adherence, prevention measures, adults, Hosanna town

Already known about this topic: the level of communities awareness about COVID-19 like, how the disease transmitted and the way of prevention mechanisms to some extent is known

These articles may add: adherence about the real practice towards COVID-19 prevention mechanism is not known. So that this study add the extent of the communities adherence about the real practice towards COVID-19 prevention in the study area which is not known in the study area.

1. Introduction

In late 2019, the World Health Organization was alerted a cluster of pneumonia cases in Wuhan, China [1]. This viral infection was attributed to a novel corona virus named 2019-nCoV, which causes the disease COVID-19 (Corona virus Disease 2019). In early March 2020, the WHO announced that the spread of COVID-19 must be assessed as a “pandemic” [2]. The pandemic is challenging both for developed and developing nation’s healthcare system, social, economic, and psychological wellbeing of humanity. Low- and middle-income countries (LMIC) are profoundly influenced because of deficient medical equipment and fundamental supplies for victims that result in a disastrous loss of life [11-12].

Preliminary data about fatality rates ranged from 0.5% to 3%, but these rates vary by different parameters such as age and coexisting medical conditions. COVID-19 was found to be highly transmissible, with the

average infected person spreading the disease more than three other individuals [1]. Communities around the world are facing extraordinary challenges to effectively slow the spread of COVID-19 and sustain their healthcare systems. Numerous countries have implemented measures, such as curfews, home quarantine, social distancing, and isolation of infected populations that severely hamper many day to- day activities [3, 4]. Additionally, governments have asked or required citizens to adopt behaviors (such as wearing masks and washing hands regularly with water and soap or sanitizers) at high levels of compliance that they will need to maintain for an extended period of time, probably until treatments and vaccines are widely available [5].

These measures have the objective of decreasing the reproduction of new infections, to less than one, and thus suppressing the local spread of the virus [6]. This situation raises a unique challenge for scientists and practitioners in understanding how to ensure adequate public cooperation and compliance. Mobilizing an effective public response to a pandemic requires clear communication and trust [7]. Because risk reduction measures such as social distancing and self-quarantine can rarely be enforced entirely by coercion, particularly in democratic societies, the public must understand what is required of them and be persuaded of the importance of complying. Corona viruses are a family of viruses that can cause illnesses such as the common cold, severe acute respiratory syndrome (SARS) and Middle East respiratory syndrome (MERS [8].

Currently, globally, over 123,591,014 confirmed cases and 2,724,113 deaths were reported. In Africa, over 874, 036 confirmed cases and 18, 498 deaths are reported. After the first case testified on March 13 in Ethiopia, the number of cases and death raised to 185, 641 and 2647 respectively [5]. Even though the outbreak is a global pandemic, it is important to note that the problem needs more attention in Africa because the African countries have limited healthcare system capacity to control the pandemic [14]. Practicing level of covid-19 prevention measures in the study area was not well-defined. Therefore, this study aimed to determine status of adherence towards covid-19 prevention measures in hosanna town.

2. Methods

2.1 Study setting

The research was conducted in the town of Hossana, Hadiya, South Ethiopia. It is situated 178 km from the city of Hawassa, the capital of the regional state, and 232 km from the capital of Ethiopia, Addis Ababa. The city of Hossana has one of three administrative areas (sub-cities) comprising 8 kebeles. The city has one referral hospital and three government health centers that provide the public with health care.

2.2 Study design and period

A community-based cross-sectional study was conducted from January 3 to 29, 2021.

2.3 Source population and Study population:

All individuals 18 years of age and above residing in Hossana Town were the source populations, while the sample populations were all individuals 18 years of age and above in the town's selected smallest administrative unit.

2.4 Sample size determination

The sample size was determined by using single population proportion formula by considering the following statistical assumptions: Confidence level (CI), 95% Proportion = 50%, Margin of error 5%=0.05 Final sample size was 384.

2.5 Sampling Techniques and Procedures

All the 8 kebeles in the Hossana town were involved in the study after proportional allocation of sample size for the all eight kebeles based on the size of households in each kebele. In each kebele, systematic sampling technique was employed after preparing sampling frame and calculating k^{th} interval for each of the kebeles. The first house hold was selected by lottery method. Either of the parents or one of the family member age above 18 was the respondent in the household if the parents were not available during data collection.

2.6 Operational definitions

Adherence towards COVID-19 prevention measures: A hand washing function, using a facemask, maintaining physical space, not going to a crowded location, not touching face, covering mouth while sneezing or coughing, disinfecting locks from remote or mobile or door and staying home during flu-like symptoms. Therefore, if he/she was able to answer 'yes' to the median and above of the aforementioned composite variables, a person was considered to have good adherence to COVID-19 preventive measures.

Good knowledge: Participants who replied to the COVID-19 information items with a median and above scores were classified as having good knowledge, otherwise poor knowledge.

Favorable attitude: Participants who replied to the attitude questions on COVID-19 and its preventive measures with a median and above scores were classified as having a favorable or otherwise unfavorable attitude.

2.7 Variables

Dependent variables: – Adherence to COVID-19 prevention

Independent variables: socio-demographic features, knowledge of COVID-19 prevention measures and attitude to COVID-19 prevention measures were independent variables.

2.8 Data collection tools and procedures

The structured questionnaire was adapted from previous research and included the following components: socio-demographic components, knowledge of prevention measures for COVID-19 and attitude towards prevention measures for COVID-19.

People who are fluent have translated the questionnaire into the local language (Amharic). The questionnaire was pre-tested in the smallest administrative units (kebeles) on 5 percent of the sample size that was not included in the actual analysis. Ten experienced 3 BSc nurses and 3 supervisors were recruited and trained, respectively, for data collection and supervision. The training was provided for 1 day and included how to confirm privacy, the design of the instrument, and interview techniques as components of the training. The information was gathered through a face-to-face interview. Participants were asked if protective measures were performed, including avoiding handshaking, hand washing, physical distancing, avoiding touching the eyes, nose and remote or door locks or mobile disinfection.

2.9 Statistical analysis

Data was entered into Epi-data version 4.0.2.101 and exported for review to SPSS version 21. Descriptive analysis was estimated for different variables, such as frequency, percentage, mean and standard deviations.

For the identification of factors associated with adherence to COVID-19 prevention measures, a binary logistic regression model was used. In bivariate analyses, all variables with a p-value <0.25 were included in the final multivariate analysis model to control all potential confounders. The odds ratio and 95% CI were used to verify the presence and strength of the relationship between independent variables and the

result variable. Finally, variables with a p-value of <0.05 were declared to be statistically significantly correlated with adherence to COVID-19 preventive measures in the multivariable analysis.

3. RESULT

3.1 Socio-demographic characteristics of the study participants

Of the total sample needed (N = 384), 377 participants were included in the study, giving a response rate of 98.2%. Around 41.9 % were in the 20-30 age groups. Of the study participants, about 294(78 %) were married and 217 (57.6 %) were females. There were two hundred sixty-seven (70.2%) unemployed. (Table1).

Table 1. Socio-demographic characteristics of the study participants among Hosanna Town, south Ethiopia, 2021

variables	Categories	Frequency	Percent
Age (in years)	<20	78	20.7
	20-30	158	41.9
	31-40	109	28.9
	>40	32	8.5
sex	Male	160	42.4
	Female	217	57.6
Education status	Cannot read and write	82	21.8
	Primary school	108	28.6
	Secondary school	95	25.2
	Higher education	92	24.4
Occupation	Employed	110	29.2
	Unemployed	267	70.2
Marital status	Unmarried	83	22
	Married	294	78
household size	1-3	113	30
	4-6	112	29.7
	≥7	152	40.3
Known chronic disease	No	37	9.8
	Yes	340	90.2

3.2 Knowledge and attitude of the respondents towards COVID-19 prevention measures

About 145 (38.5 %) of all respondents had poor knowledge of COVID-19 preventive measures and only 40.3 % had poor knowledge of COVID-19 transmission methods. About two-third of respondents was correctly informed of the symptoms of COVID-19 (Table 2).

Table 2. Knowledge and attitude of the study participants about COVID- 19 prevention measures among Hosanna Town, south Ethiopia, 2021

Knowledge towards prevention methods	Poor	145	38.5
	Good	232	61.5
Attitude towards prevention	Unfavorable	152	40.3

methods	Favorable	225	59.7
Heard about Covid-transmission	No	37	9.8
	Yes	340	90.8
Heard about Covid-19 complications	No	61	16.2
	Yes	316	83.8
Knows about mode of transmission	No	143	37.9
	Yes	234	62.1
Correctly knows Covid-10 symptoms	No	92	24.4
	Yes	285	75.6

3.3 Adherence towards COVID-19 prevention measures

This study showed that about 50.4 % of the participants in the study had good adherence to preventive measures for COVID-19. Among the prevention measures, the most common practiced ones by the respondent were wearing mask when going outside and avoiding traveling to the crowd area. However, the respondent's least practiced elements were the physical distance 2 and above meters and the avoidance of touching faces (Table 3).

Table 3 adherence towards COVID-19 preventive measures among respondents living in Hosanna Town, south Ethiopia, 2021

Prevention measures	Categories	
1. Keeping physical distance 2 and above meters	Yes, n (%)	120(31.8)
	No, n (%)	257(68.2)
2. Wear face mask when going outside	Yes, n (%)	245(65)
	No, n (%)	132(35)
4. Cover mouth when coughing or sneezing	Yes, n (%)	240(63.6)
	No, n (%)	137(36.4)
6. Frequent hand washing	Yes, n (%)	190(50.4)
	No, n (%)	187(49.6)
8. Stay home when feel flu-like symptoms	Yes, n (%)	250(66.3)
	No, n (%)	127(33.7)
10. Avoiding touching face	Yes, n (%)	120(31.8)
	No, n (%)	257(68.8)
12. Avoid travel to a crowded place	Yes, n (%)	290(76.9)
	No, n (%)	87(23.1)
14. Disinfecting remote, mobile or door locks	Yes	80(21.2)
	No	297(78.8)
Overall adherence towards COVID_19 prevention measures	Poor, n (%)	187(49.6%)
	Good, n (%)	190(50.4%)

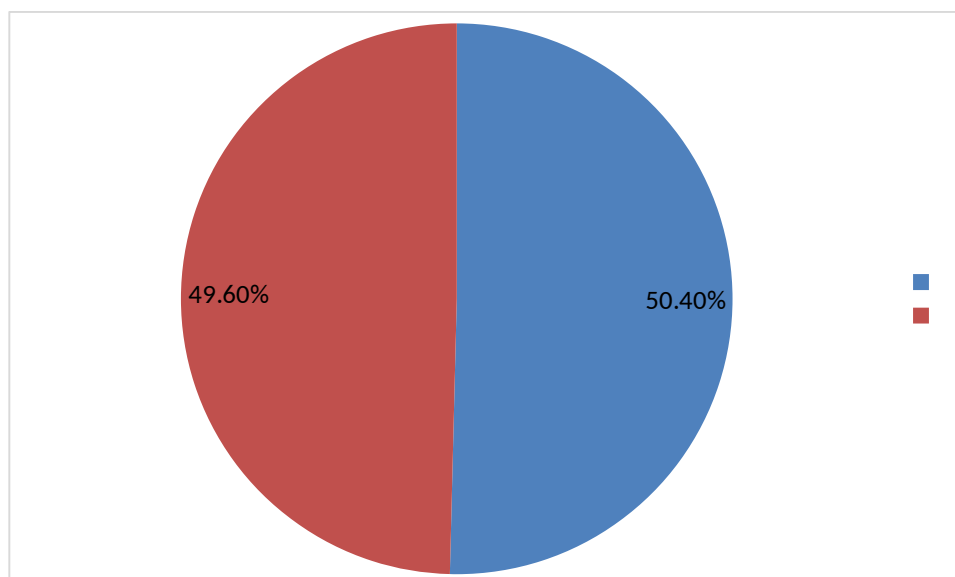


Figure 1: shows Adherence towards COVID-19 prevention measures among respondents living in Hosanna Town, south Ethiopia, 2021

3.4 Factors associated with adherence towards Covid-19 prevention methods

Binary logistic regression was used to evaluate the relationship between all possible independent variables and adherence to COVID-19 prevention methods. In the bivariate analysis, variables such as age, sex, educational status, household size, marital status, COVID-19 transmission, COVID-19 complication, COVID-19 prevention measure knowledge, and covid-19 prevention measure attitude were candidate independent variables for the multivariate analysis. Age, educational status, family size, marital status, and heard about complication of COVID-19 were statistically significant independent variables correlated with adherence to COVID-19 preventive measures after controlling for confounders in a multivariable binary logistic regression study. Therefore, respondents aged >40 years were 66 percent less likely than respondents aged <20 years to have strong adherence to the COVID-10 prevention measure [AOR: 0.34; 95%CI (0.131-0.912)].

Respondents with primary school education status were 68 percent less likely than respondents who could not read and write [AOR: 0.32; 95 % CI (0.165-0.632)] to have strong adherence to COVID-19 prevention measures. And, married participants were 2 times more likely than unmarried respondents to have strong adherence to COVID-19 preventive measures [AOR: 2; 95 % CI (1.191-3.803)]. And also, compared to family size 1-3, household family size 7 and above was 2.4 times more likely to have strong adherence with COVID-19 preventive measures [AOR: 2.4; 95 percent CI (1.322-4.366)]. In addition, respondents were 51 percent less likely to have good practice in preventing COVID-19 complications compared to respondents who did not hear about the complications [AOR: 0.49; 95 percent CI (0.242-0.979)]. (Table 4).

Table 4 Factors associated with adherence towards Covid-19 prevention methods in Hosanna Town, south Ethiopia, 2021

Variables	Categories	Adherence status	COR(CI)	p-value	AOR at 95%CI	P-value
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		Poor	Good				
Age(in years)	<20	37(19.7)	41(21.7)	1		1	
	20-30	79(42)	79(41)	0.9(0.524-1.553)	0.71	0.95(0.511-1.770)	0.87
	31-40	51(27.1)	58(30.7)	1.02(0.573-1.84)	0.93	0.94(0.491-1.900)	0.92
	>40	21(11.2)	11(5.8)	0.47(0.201-1.111)	0.08*	0.34(0.131-0.912)	0.03**
Sex	Male	91(48.4)	69(36.5)	1		1	
	Female	97(51.6)	120(63.5)	1.6(1.081-2.463)	0.020*	0.9(0.126-6.900)	0.94
Education status	Cannot read and write	30(16)	52(27.5)	1		1	
	Primary school	65(34.6)	43(22.8)	0.4(0.211-0.690)	0.001*	0.32(0.165-0.632)	0.001**
	Secondary school	48(25.5)	47(24.9)	0.56(0.309-1.032)	0.06*	0.55(0.330-1.271)	0.20
	Higher education	45(23.9)	47(24.9)	0.6(0.328-1.1060)	0.10	0.68(0.0.344-1.33)	0.26
Occupation	Unemployed	50(26.6)	60(31.7)	1		1	
	Employed	138(73.4)	129(68.3)	0.8(0.499-1.216)	0.27		
Marital status	Unmarried	50(26.6)	33(17.5)	1		1	
	Married	138(73.4)	156(82.5)	1.7(1.043-2.812)	0.03*	2(1.191-3.803)	0.011**
House hold size	1-3	63(33.5)	50(26.5)	1		1	
	4-6	61(32.4)	51(27)	1(0.623-1.782)	0.84	1.6(0.819-3.053)	0.2
	≥7	64(34)	88(46.6)	1.7(1.06-2.832)	0.028*	2.4(1.322-4.366)	0.004**
With known chronic disease	No	170(90.4)	170(89.9)	1		1	
	Yes	18(9.6)	19(10.1)	1.05(0.535-2.081)	0.87	0.73(0.331-1.601)	0.430
Knowledge about prevention methods	Poor	85(42.2)	60(31.7)	1		1	
	Good	103(54.8)	129(68.3)	1.8(1.166-2.700)	0.007*	1.8(0.0.552-5.775)	0.33
Attitude towards Covid-19 prevention strategies	Unfavorable	86(45.7)	66(34.9)	1		1	
	Favorable	102(54.3)	123(65.1)	1.6(1.038-2.378)	0.033*	0.88(0.177-4.346)	0.87
Heard about Covid-transmission	No	26(13.8)	11(5.8)	1		1	
	Yes	162(86.2)	178(94.2)	0.4(0.184-0.804)	0.011*	0.45(0.164-1.223)	0.12
Heard about	No	42(22.3)	19(10.1)	1		1	

Covid-19 complications	Yes	146(77.7)	170(89.9)	0.4(0.216-0.698)	0.002*	0.49(0.242-0.979)	0.043**
Knows about mode of transmission	No	64(34)	79(41.8)	1		1	
	Yes	124(66)	110(58.2)	0.72(0.473-1.091)	0.12	0.7(0.375-1.338)	0.7

Significantly associated **

4. Discussion

This study showed that the community's overall adherence to COVID-19 preventive interventions was 50.4%. This outcome of this finding was almost identical to the study conducted in Gondar Area ^[10], with 51 % of the overall adherence to preventive measures. But, higher than the research made in Dire Dawa^[9], North Shoa-Ethiopia^[11], North West-Ethiopia^[12], Darashe district South Ethiopia^[13], Uganda^[14] and the Gulf of Mexico^[15], which were 40.7%, 44.1%, 38.73%, 12.3%, 29% and 47.1% respectively. These discrepancies may be due to increasing cases of Covid-19 or increasing complications due to increased cases that forced the population in this study to apply preventive measures.

Only 31.8% of the common preventive measures maintain physical distance 2 and above meters, which is very small compared to the studies conducted in Dire Dawa ^[9], Gondar City ^[10], Dirashe District-South Ethiopia ^[13], Mozambique ^[16] and Uganda ^[14], 62.4%, 73.84%, 65.8., 95%, and 96%, respectively, of the common prevention measures. For the certain covid-19 preventive measures in the study area, this low level of physical distance in this study may be small sample size, the existence of respondents or group resistance.

About 65% reported wearing mask when they go outside, the other unique preventive method is wearing mask. The mask wearing practice in this study was almost equivalent to the Dire Dawa ^[9] study, 67.2%. But higher than the studies conducted in Gondar City ^[10], Uganda ^[14] and Brazil ^[17], which were 32.42%, 33% and 45.5% respectively. In this study, however, the practice of wearing masks was lower than the studies carried out in Mozambique ^[16] and China^[18], with 96.5% and 96.4%. The discrepancy may be due to the variance in the time study, as people are currently being careless and ignorant compared to the study conducted immediately after the respondents' evolving COVID-19 pandemic or study climate or socio-demographic character.

This finding reveal that covering the mouth while sneezing or coughing was 63.6 percent, which is higher than studies conducted in the districts of Dire Dawa^[9] and Dirashe, South Ethiopia^[13] 32.7% and 42.7% respectively and lower than the Mozambique ^[16] and Uganda ^[14] reports, which were 96.9% and 86% Respectively. The difference in these may be due to the study climate or socio-economic characteristics of the respondents or the difference in awareness.

This study reveal that those participants with age range of greater than 40 years were more likely adhere to the covid-19 prevention practice than other age groups. In this study we face that those individuals with primary education were less likely adhere with covid-19 prevention practice than those with higher educational status. Possible reason might be when the individuals educational status increases knowledge towards covid-19 prevention and control will be high and likely hood of the action with regards to adhere with covid-19 prevention practice will be high. This study shows that those married participants were two times more likely adhere with the covid-19 prevention practice than unmarried and those respondents with high family size were more likely to adhere with adhere with the covid-19 prevention practice. The reason

behind this might be when there is family behind the individual there may be worry about being healthy of the family or their spouse and practicing preventive behavior of covid-19 and adherence on it might be increased than those living in single life or with small family members. Also this study reveal that participants heard about Covid-19 complication were more likely adhere than from their counter parts. The possible justification might be when the individual belief that he/she is at risk for some condition and he/she belief that risk is with complication or serious the probability of practicing preventive behavior will be high. That is why in this those know about the complication of covid-19 were more likely adhere with covid-19 prevention practice.

5. Conclusion and recommendation

This research showed that about half of the participants had low adherence to preventive measures for COVID-19. Ages, educational age, marital status, family size, and the complication of COVID-19 were factors that greatly influenced adherence to preventive measures for COVID-19.

It is therefore important to work on adherence to preventive measures through the sensitization and updating of COVID-19 impact information and its prevention measures. Prevention steps, particularly for those who are readily accessible and practicable, such as the use of masks, hand washing and avoiding travel to crowds.

Abbreviation

Covid-19-corona virus diseases 2019

LMIC-Low- and middle-income countries

SARS- sever acute respiratory syndrome

Ethics approval and consent to participate

The data collection was carried out after approval by ethical committee of college of medicine and health sciences, Wachamo University. The study was conducted based on voluntary participation by study subjects after explaining the purpose of study. All the information accessed from study participants were kept confidentially.

Availability of data and materials

The data that support the findings of this study are available upon reasonable request

Competing interests

The authors declare that they have no competing interests.

Authors' contributions

TT coordinated the overall research activities and analyzed the data in software, LA participated in data analysis and statistical techniques, both authors participated in methodological part of the study. Both of them read and approved the final version of this manuscript.

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