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COVID-19 Prevention Practices and Associated Factors among Patients with Chronic Diseases in Nekemte Town, Western Oromia, Ethiopia.

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Abstract

Background: *Multiple studies have shown that chronic disease patients are at a higher risk of severe illness and worse outcomes if infected with COVID-19. Preventive measures, including vaccination and adherence to public health guidelines, are critical in mitigating disease transmission and preventing severe illness. Despite this, chronic disease patients often display poor prevention practices and vaccine hesitancy. This study assessed the magnitude and factors associated with COVID-19 prevention practices among chronic disease patients in Nekemte Town, Western Oromia, Ethiopia.*

Methods: *A cross-sectional study involving 403 patients with chronic diseases was conducted at outpatient clinics in public hospitals in Nekemte town from May to June 2022. Bivariable and multivariable logistic regression analyses were used to identify factors associated with COVID-19 prevention practices. The adjusted odds ratio (AOR) with a 95%CI was used to evaluate the strength of associations, with p-values below 0.05 considered statistically significant.*

Results: *The magnitude of poor COVID-19 prevention practice was 58.3% (95%CI: 53.5%, 63.1%). Age (18-40 years; AOR: 2.1, 95% CI: 1.02, 4.20), occupation (Merchant; AOR: 1.88, 95% CI: 1.03, 3.45), and having poor knowledge (AOR: 2.53, 95% CI: 1.04, 6.12) were significantly associated with poor COVID-19 prevention practice.*

Conclusion*: The study revealed that 58.3% (95% CI: 53.5%, 63.1%) of chronic disease patients had poor adherence to COVID-19 prevention practices. Factors like age, occupation, and knowledge about COVID-19 were contributors towards poor COVID-19 prevention. Public health authorities should create targeted interventions, including educational campaigns and community outreach, to improve compliance and health outcomes in these groups.*

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INTRODUCTION

The emergence of a novel coronavirus (2019nCov) in China in December 2019 raised concerns about global public health. According to the International Committee on Taxonomy of Viruses (ICTV), this virus was dubbed the Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2), and the illness was called Coronavirus (1). Acute respiratory illness COVID-19 is brought on by SARS-CoV-2, a new coronavirus closely related to SARS-CoV. Close contact (within 6 feet) between symptomatic and asymptomatic individuals can spread the virus through respiratory droplets (2).

In older patients, particularly those with pre-existing medical co-morbidities, the coronavirus disease 2019 (COVID-19) has consistently been associated with an excessive burden of severe illness and death. (3–6). In China, a retrospective cohort study of 191 COVID-19 patients revealed that 91 (48%) of them had underlying chronic diseases, and 54 of them passed away in the hospital (7,8).

After the first confirmed case of COVID-19 in March 2020, the Ethiopian government promptly put several public health measures into place to prevent higher infection levels. Among these actions were the closure of all schools and restrictions on travel and big gatherings. Hand washing and social distancing were the main preventive measures that the government promoted to the public through a range of media platforms (9–11). The lack of a comprehensive strategy to guarantee vaccine access in developing nations threatens prolonging the pandemic, increasing inequality, and postponing the global economic recovery. Currently, despite the availability of an effective vaccine, its distribution is restricted (12). Lack of qualified medical staff, poor health infrastructure (including sufficient facilities for storing vaccines), and insufficient tracking systems are just a few of these issues (13).

Ethiopia is particularly susceptible to the pandemic because of its poor infrastructure, population mobility, weak health system, and susceptibility to social and political upheaval. Therefore, the nation's top priority is implementing effective prevention intervention strategies to avoid the rapidly spreading virus (12).

Numerous studies have demonstrated that individuals with chronic illnesses are more likely to experience severe illness and worse outcomes if they contract COVID-19 (1,2). This population needs to take effective preventive measures, like wearing masks, washing their hands, and keeping a physical distance, because they are more vulnerable. Furthermore, since the COVID-19 vaccine can offer extra protection against serious illness, it is highly advised for people with chronic illnesses (2). Patients with chronic diseases, however, only sometimes follow these recommendations regarding preventive measures. This group has exhibited elevated levels of vaccine hesitancy and inadequate preventative measures (1). The purpose of this study is to evaluate the extent of COVID-19 prevention behaviors and related variables among patients with chronic illnesses in Nekemte Town, Western Oromia, Ethiopia. For public health interventions to be effective, it is essential to comprehend the factors that affect patients with chronic diseases' preventive practices, such as their knowledge, attitudes, and beliefs, as well as their access to healthcare resources and social support. By examining post-vaccination adherence to COVID-19 preventive measures among chronic illness patients in public hospitals, this study seeks to close gaps in knowledge.

To improve preventive measures and lower the spread of COVID-19 in healthcare settings, the study aims to identify barriers and facilitators to inform focused interventions and policies.

METHODS

Study design, setting, and Period

A hospital-based cross-sectional study was conducted from May to June 2022 at public hospitals in Nekemte Town, Western Ethiopia, which includes the Nekemte Comprehensive Specialized Hospital (NCSH) and Wollega University Referral Hospital (WURH). Nekemte, the capital of the East Wollega Zone, had a population of 76,817 in the 2007 National Census, with 50.98% males and 49.02% females. The town's health facilities comprise two governmental hospitals, two health centers, two NGO clinics, nine mid-level private clinics, 16 small private clinics, five drug stores, seven pharmacies, and five rural drug vendors.

Population and eligibility criteria

All adult patients with a chronic illness who attended the chronic disease follow-up clinics at Nekemte Town Public Hospitals served as the source population, and all adult patients with a chronic illness who were accessible during data collection served as the study population. The study included all patients with chronic conditions (hypertension, diabetes mellitus, chronic kidney disease, cardiovascular and liver disease, HIV/AIDS, and tuberculosis) who were available at the chronic care clinics during the data collection period. Patients on follow-up during the study period and unable to answer questions because they were in critical condition, younger than 18 years old or health professionals were excluded.

Sample Size and Sampling Procedures

The sample size was calculated by using a single population proportion formula (Z (α/2) ^2 p (1-p)/d^2). The sample size for significantly associated factors with practice was calculated from earlier studies using EPI-info with a 95% CI and 80% power (21-26). The largest calculated sample size was considered for this study. The final largest sample 403, calculated by single population proportion with 47.3% prevalence of poor practice taken from a study conducted at Addis Zemen, with a 95% confidence interval, 5% margin of error (d), and 5% non-response rate taken for this study (14).

$n= (Z (\alpha/2)^{\wedge 2} p (1-p))/d^{\wedge 2} = (1.96)2\ 0.473(1-0.473))/ ((0.05)^{2}) = 383.$

Where:

n = required sample size

P = chronic patients' practice towards COVID-19 Prevention and control obtained from the related study.

Z = Significance level at a confidence interval of 95%

d = margin of error (0.05).

Z α/2 = value of the standard normal distribution corresponding to a significant level of alpha (α) 0.05, which is 1.96.

With a 5% non-response rate, the final sample size was **403.**

Based on the list of patients with chronic illnesses retrieved from both hospital registration files, the calculated sample size was allocated proportionately to the number of patients in each hospital (252 participants were assigned to Nekemte Specialized, and 151 participants were assigned to Wallaga University referral hospitals). After determining the sampling interval by dividing the total number of adults with chronic disease in each hospital by the desired sample size based on the patient flow from the previous month, the necessary numbers of people assigned to each hospital were chosen by systematic random sampling. Based on their medical registration number, the first study participant was chosen randomly from the k participants who were scheduled on the

day of data collection. Lastly, on the day of their follow-up, data were gathered from the kth person for each hospital from the randomly chosen participants until the necessary samples were acquired.

Data collection procedure and Variable measurement

The necessary data were gathered using a pre-tested structured interviewer-administered questionnaire created after reviewing related studies (24-26). Sociodemographic factors, awareness, 19 knowledge, 14 attitudes, and 12 practice-related questions make up the questionnaire. The answers to the knowledge and attitude questions were true or false, and I am not sure. Correct answers received a score of 1, while incorrect and unknown answer alternatives received a score of 0. Two alternative (yes/no) questions were used to answer practice questions. Participants in the study were classified according to their overall knowledge, attitude, and practice using Bloom's cut-off point: good if their score was between 80 and 100 per cent, moderate if their score was between 60 and 79 per cent, and poor if their score was less than 60 per cent (15). After two days of training in data collection, BSc nurses collected data under close supervision.

Study variables

Dependent variable: COVID-19 Prevention practice

Independent variables: Socio-demographic variables include -Sex, age, monthly income, residence, occupation, educational level, and marital status. Sources of information like - social media, radio, and television; Knowledge and attitude toward prevention practices

Operational definitions

Good knowledge: respondents who scored 80% and above for knowledge questions were considered to have good knowledge

Moderate knowledge: respondents who scored between 60% and 79% for knowledge questions were considered to have moderate knowledge

Poor knowledge: respondents who scored below 60% for knowledge questions were considered to have poor knowledge.

Good attitude: respondents who scored 80% and above for attitude questions had a good attitude.

Moderate attitude: respondents who scored between 60% and 79% for attitude questions were considered to have a moderate attitude.

Poor attitude: respondents who scored below 60% for attitude questions were considered to have poor attitude

Data processing and analysis procedures

After being manually coded and verified to be complete, the data was imported into Epi Data Version 3.1 and then exported to SPSS Version 25 for analysis. Univariate analysis was conducted to describe the socioeconomic and clinical features as well as the knowledge, attitude, and practice of the study participants. Binary and multivariable logistic regression analyses were conducted to identify the factors associated with poor implementation of COVID-19 prevention strategies. Bivariate logistic regression variables with p-values less than 0.25 were transferred to multivariable logistic regression. With a 95% confidence interval, an adjusted odd ratio (AOR) demonstrated the strength of the factors linked to COVID-19 prevention practices (CI). A P-value of less than 0.05 was declared statistically significant.

Data quality management

Before the data were collected, the questionnaire pre-tested 5% of Gimbi General Hospital patients with chronic illnesses who were not included in the study. When the data collection tool's internal consistency was examined, the Cronbach's alpha value fell

within an acceptable range (0.805 for knowledge questions, 0.786 for attitude questions, and 0.81 for practice-related questions). After two days of training for data collectors, fluent speakers of the local language collected the necessary data under constant supervision.

Ethics Statement

The research protocol received ethical approval from Jimma University's Institutional Review Board, which issued reference number IHRPG1/54/2021. Every study participant gave oral informed consent after being fully informed about the study's objectives, information confidentiality, and respondent privacy. The study was done in accordance with the Helsinki Declaration.

RESULTS

Socio-demographic Characteristics

The study comprised 403 participants, achieving a complete response rate of 100%. Among them, 51.4% were male, and 53.8% were between the ages of 18 and 40 years. A significant majority, 70.0%, were married. Regarding educational attainment, 41.2% had completed secondary education or higher, 27.0% were illiterate, and 15.6% could read and write but had not completed secondary education. Most participants (62.5%) lived in urban areas. The income distribution revealed that 34.5% earned 1500 ETB or less, 32.8% earned between 1501 and 3000 ETB, and 32.8% earned more than 3000 ETB. In terms of occupation, 32.5% were government employees, 22.1% were merchants, 28.3% were farmers, and 17.1% were housewife (Table 1).

Table 1. Sociodemographic characteristics of chronic disease patients, Nekemte town, Western Ethiopia, 2023 (N=403).

Variables	**Category**	**N (%)**
Sex	Male	207(51.4%)
	Female	196(48.6%)
Age (in years)	18-40	217(53.8%)
	41-55	135(33.5%)
	>55	51(12.7%)
Marital status	Married	282(70.0%)
	Unmarried	65(16.1%)
	Divorced	24(6.0%)
	Widowed	32(7.9%)
Educational status	unable to read and write	109(27.0%)
	only read and write	63(15.6%)
	primary education	65(16.1%)
	secondary and above	166(41.2%)
Place of residence	Urban	252(62.5%)
	Rural	151(37.5%)
Monthly Income (ETB)	<=1500	139(34.5%)
	1501-3000	132(32.8%)
	>3000	132(32.8%)
Occupation	government employee	131(32.5%)
	Merchant	89(22.1%)
	Farmer	114(28.3%)

	Housewife	69(17.1%)

Clinical characteristics of the participants

Of the total of 403 participants included in the study, 27.8% (n = 112) had diabetes mellitus, 23.8% (n = 96) had heart disease, 20.1% (n = 81) had hypertension, 10.7% (n = 43) had tuberculosis, 6.7% (n = 27) had a chronic lung disease, and 26.8% (n = 108) of participants had HIV/AIDS, respectively.

Knowledge of chronic disease patients about COVID-19 prevention

The study participants had a good understanding of COVID-19 symptoms, transmission, and preventive measures. However, some had misconceptions about the effectiveness of current measures and the importance of preventive actions for children and young adults. Most correctly identified fever (83.9%), cough (88.6%), shortness of breath (89.3%), and fatigue (78.4%) as symptoms, and 72.2% knew symptoms appeared within 2–14 days (about two weeks). About 48.4% believed current measures were effective, and 55.3% recognized that not all cases are severe. A majority (89.3%) acknowledged that chronic illnesses increase severity. High awareness was shown for transmission via hand contact (96.3%), contaminated surfaces (97.5%), respiratory droplets (94.3%), and asymptomatic spread (59.6%). Participants recognized the importance of masks (92.3%), preventive measures for children and young adults (80.1%), avoiding crowds (94.5%), and hand hygiene (94.5%). Most (95.5%) acknowledged risks from travel to infectious areas or contact with infected individuals, and 94.8% recognized isolation and treatment as effective. The majority (97.0%) believed in isolating contacts of infected individuals (Table 2).

Table 2. Frequency and response by the study participants for COVID-19 knowledge-related questions in Nekemte Town, West Ethiopia, 2022 (N=403).

Variables	Response	N (%)
Fever is a clinical symptom of the COVID-19 virus	Yes	338(83.9%)
	No	32(7.9%)
	do not know	33(8.2%)
Cough is a clinical symptom of the COVID-19 virus	Yes	357(88.6%)
	No	18(4.5%)
	do not know	28(6.9%)
Shortness of breath is a clinical symptom of the COVID-19 virus	Yes	360(89.3%)
	No	15(3.7%)
	do not know	28(6.9%)
Fatigue is a clinical symptom of the COVID-19 virus	Yes	316(78.4%)
	No	29(7.2%)
	do not know	58(14.4%)
COVID-19 symptoms appear within 2-14 days (about 2 weeks)	Yes	291(72.2%)
	No	23(5.7%)
	do not know	89(22.1%)
The current available COVID-19 is effective in protecting against the virus.	Yes	195(48.4%)
	No	130(32.3%)
	do not know	78(19.4%)
	Yes	223(55.3%)

Not all persons with COVID-19 will develop severe cases from the COVID-19 virus	No	124(30.8%)
	do not know	56(13.9%)
chronic illnesses patients are more likely to be in severe cases of COVID-19 infection	Yes	360(89.3%)
	No	21(5.2%)
	do not know	22(5.5%)
COVID-19 can be transmitted through the Touching or shaking of the hands of an infected person	Yes	388(96.3%)
	No	8(2.0%)
	do not know	7(1.7%)
Touching an object or surface having a virus on it, then touching your mouth, nose, or eyes with an unwashed hand would result in the infection by the COVID-19 virus	Yes	393(97.5%)
	No	4(1.0%)
	do not know	6(1.5%)
The COVID-19 virus spreads via respiratory droplets of infected individuals	Yes	380(94.3%)
	No	5(1.2%)
	do not know	18(4.5%)
Persons with COVID-19 cannot infect others if he has no symptoms of COVID-19	Yes	240(59.6%)
	No	112(27.8%)
	do not know	51(12.7%)
Wearing masks when moving out of the home is important to prevent the infection with COVID-19 virus	Yes	372(92.3%)
	No	20(5.0%)
	do not know	11(2.7%)
Children and young adults do not need to take measures to prevent infection by the COVID-19 virus	Yes	63(15.6%)
	No	323(80.1%)
	do not know	17(4.2%)
To prevent COVID-19 infection, individuals should avoid going to crowded places	Yes	381(94.5%)
	No	16(4.0%)
	do not know	6(1.5%)
Washing hands often with soap and water for at least 20 seconds or using an alcohol-based hand sanitizer (60%) is important to prevent infection with COVID-19	Yes	381(94.5%)
	No	16(4.0%)
	do not know	6(1.5%)
Traveling to an infectious area or having contact with someone who traveled to an area where the infection is present is a risk for developing an infection	Yes	385(95.5%)
	No	10(2.5%)
	do not know	8(2.0%)
Isolation and treatment of people who are infected with the COVID-19 virus are effective ways to reduce the spread of the virus	Yes	382(94.8%)
	No	11(2.7%)
	do not know	10(2.5%)
People who have contact with someone infected with the COVID-19 virus should be at once isolated in a proper place	Yes	391(97.0%)
	No	4(1.0%)
	do not know	8(2.0%)

The attitude of chronic disease patients toward COVID-19 prevention

The study revealed diverse attitudes towards COVID-19 preventive practices among

chronic disease patients. A sizable portion (43.7%) perceived a substantial risk of infection, 36.5% saw a medium risk, and 19.9% felt a minimal risk. Regarding the level of care needed, 62.5% believed high care was crucial, 29.3% medium care, and 8.2% low care. Personal feelings about infection varied, with 66.7% finding it annoying, 19.4% quite easy, and 13.9% easy. For specific practices, 48.9% found frequent handwashing quite easy, 41.7% easy, and 9.4% difficult. Avoiding face-touching was quite easy for 33.7%, easy for 29.5%, and difficult for 36.7%. Avoiding handshakes was quite easy for 34.7%, easy for 33.3%, and difficult for 32.0%. Social distancing measures showed that 34.7% avoided crowds quite easily, 31.8%, and 33.5% difficult. Physical distancing was quite easy for 29.8%, easy for 30.0%, and difficult for 40.2%. Isolating when sick was quite easy for 35.0%, easy for 37.2%, and difficult for 27.8%. Staying home was quite easy for 32.3%, easy for 30.8%, and difficult for 37.0%. Lastly, 58.3% found following authorities' directions quite easy, 29.0% easy, and 12.7% difficult. (Table 3)

Table 3. Frequency and response by the study participants for COVID-19 attitude-related questions in Nekemte town, West Ethiopia, 2022 (N=403).

Variables	**Response**	**N (%)**
What do you think is your Risk of infection with COVID-19	Elevated risk	176(43.7%)
	Medium risk	147(36.5%)
	Minimal risk	80(19.9%)
What level of care do you think is important for you about protection against COVID-19 infection	High care	253(62.5%)
	Medium care	118(29.3%)
	Low care	33(8.2%)
What do you think of being infected with COVID-19?	Quite easy	78(19.4%)
	Easy	56(13.9%)
	annoying	269(66.7%)
What do you think Washing hands often with soap and water for at least 20 seconds for COVID-19 prevention?	Quite easy to practice	197(48.9%)
	Easy to practice	168(41.7%)
	Difficult to practice	38(9.4%)
Avoiding touching faces with unwashed hands for COVID-19 prevention is	Quite easy to practice	136(33.7%)
	Easy to practice	119(29.5%)
	Difficult to practice	148(36.7%)
Avoiding shaking others	Quite easy to practice	140(34.7%)
	Easy to practice	134(33.3%)
	Difficult to practice	129(32.0%)
Avoiding attending crowded population area	Quite easy to practice	140(34.7%)
	Easy to practice	128(31.8%)
	Difficult to practice	135(33.5%)
Practicing physical distancing	Quite easy to practice	120(29.8%)
	Easy to practice	121(30.0%)
	Difficult to practice	162(40.2%)
	Quite easy to practice	219(54.3%)

Covering mouth or nose with an elbow during coughing or sneezing	Easy to practice	137(34.0%)
	Difficult to practice	47(11.7%)
Avoiding close contact with infected individuals	Quite easy to practice	199(49.4%)
	Easy to practice	134(33.3%)
	Difficult to practice	70(17.4%)
Using a face mask during home leaving	Quite easy to practice	241(59.8%)
	Easy to practice	114(28.3%)
	Difficult to practice	48(11.9%)
Listening and following directions given by state and local authority	Quite easy to practice	235(58.3%)
	Easy to practice	117(29.0%)
	Difficult to practice	51(12.7%)
Isolating oneself if one gets sick to avoid the spread of COVID-19	Quite easy to apply	141(35.0%)
	Easy to practice	150(37.2%)
	Difficult to practice	112(27.8%)
Staying at home to reduce the risk of infection	Quite easy to practice	130(32.3%)
	Easy to practice	124(30.8%)
	Difficult to practice	149(37.0%)

COVID-19 prevention practice among chronic disease patients

The study revealed that 58.3% (95% CI: 53.5%, 63.1%) of participants had poor COVID-19 preventive practices. While many engaged in key practices like mask-wearing (87.8%) and handwashing (78.7%), areas needing improvement included physical distancing (27.5%) and staying home when sick (43.4%). About 66.7% attended social gatherings, 49.1% touched the front of their masks, and 59.6% reused disposable masks. Additionally, 62.0% avoided touching their face with unwashed hands, 66.3% cleaned often-touched objects, and 72.5% limited contact and avoided handshakes. Most participants (77.7%) covered their nose and mouth when coughing or sneezing, and 58.3% found it easy to follow authorities' directions (Table 4).

Table 4. Frequency and response by the study participants for COVID-19 practice-related questions in Nekemte town, West Ethiopia, 2022 (N=403).

Variables	**Response**	**N (%)**
Participate in meetings, religious activities, events, and other social gatherings or any crowd.	Yes	269(66.7%)
	No	134(33.3%)
worn a mask when leaving a home in recent days	Yes	354(87.8%)
	No	49(12.2%)
Touch the front of the mask when taking it off	Yes	198(49.1%)
	No	205(50.9%)
Reuse a disposable mask.	Yes	240(59.6%)
	No	163(40.4%)
wash hands with soap and water often	Yes	317(78.7%)
	No	86(21.3%)
Touch eyes, nose, and mouth often with unwashed hands	Yes	153(38.0%)
	No	250(62.0%)

Clean and disinfect often-touched objects	Yes	267(66.3%)
	No	136(33.7%)
Practice physical distancing	Yes	111(27.5%)
	No	292(72.5%)
Use others' phones, tables, offices, and or others' work tools tool	Yes	189(46.9%)
	No	214(53.1%)
Limit contact such as handshaking.	Yes	292(72.5%)
	No	111(27.5%)
Cover your nose and mouth during coughing or sneezing	Yes	313(77.7%)
	No	90(22.3%)
Stay home when you are sick due to a common cold-like infection	Yes	175(43.4%)
	No	228(56.6%)

Knowledge, attitude, and practice of COVID-19 prevention practice of chronic disease patients

Figure 1 shows that, among chronic disease patients, 247 (61.3%) had good knowledge, 124 (30.8%) had moderate knowledge, and 32 (7.9%) had a low knowledge level. Regarding attitudes, 33 (8.2%) of participants demonstrated a good attitude, 68 (16.9%) had a moderate attitude, and the majority, 302(74.9%), had a low attitude. Participants practice varied, with 37 (9.2%) demonstrating good practice, 131 (32.5%) exhibiting moderate practice, and the majority, 235 (58.3%), displaying poor practice (Figure 1).

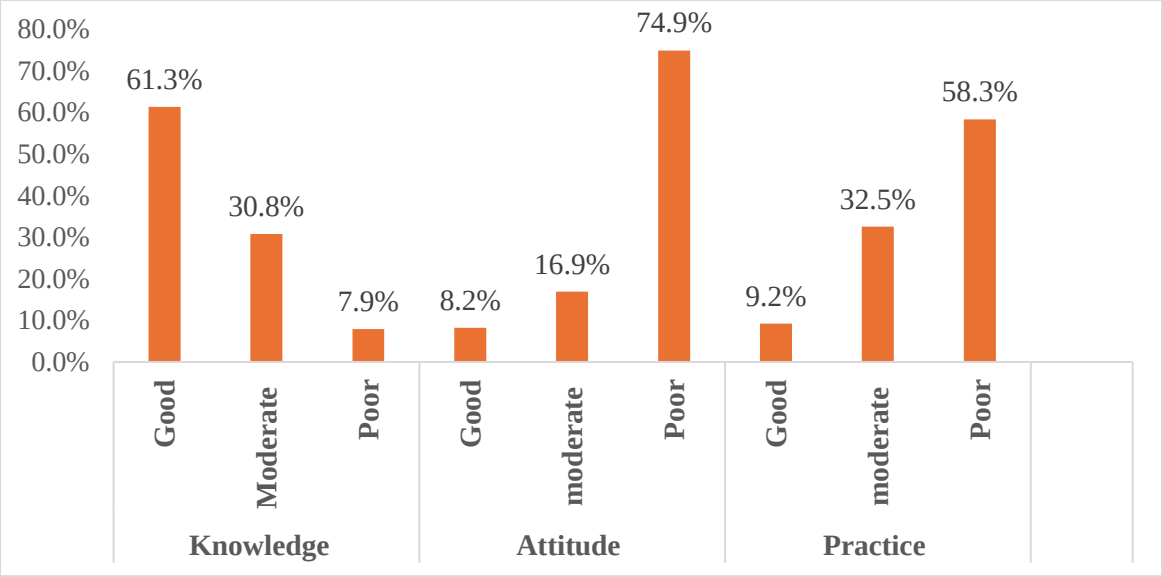

Figure 1. Knowledge, attitude, and Practice of Chronic Disease Patients towards COVID-19 Prevention Measures, Nekemte town, Western Ethiopia, 2022 (N=403).

Determinants of COVID-19 prevention practice among chronic disease patients

Bivariable and multivariable logistic regression analyses were performed to identify the determinants of poor practice toward COVID-19 prevention among the study participants. Among the variables analyzed, the following factors were found to

be statistically significant in multivariable logistic regression analysis after controlling for potential confounders: Participants aged 18–40 had 2.1 times higher odds of poor practice towards COVID-19 prevention compared to those over 55 (AOR: 2.1, 95% CI: 1.02, 4.20). Patients working as merchants had 1.88 times higher odds of poor practice than government employees (AOR: 1.88, 95% CI: 1.03, 3.45). Patients with poor knowledge had 2.53 times higher odds of poor practice than those with good knowledge (AOR: 2.53, 95% CI: 1.04, 6.12, p = 0.04). (Table 5).

Table 5. Bivariable and multivariable analyses results of Determinants of COVID-19 prevention practice among chronic disease patients in Nekemte town, Western Oromia, Ethiopia, 2022 (N=403)**.**

Variables	**Category**	**COVID-19 Prevention Practice**		**COR (95%CI)**	**AOR (95%CI)**	**P-Value**
		Good	Poor			
Age in years	>55	24(24.3%)	27(11.5%)	Ref.		
	41-55	63(37.5%)	72(30.6%)	1.02(0.53,1.94)	1.31(0.65,2.62)	0.45
	18-40	81(48.2%)	136(57.9%)	1.49(0.81.2.76)	**2.10(1.02,4.20)***	0.04
Marital status	Married	118(70.2%)	164(69.8%)	Ref.		
	Unmarried	26(15.5%)	39(16.6%)	1.08(0.62,1.87)	0.97(0.52,1.80)	0.92
	Divorced	10(6.0%)	14(6.0%)	1.01(0.43,2.34)	0.92(0.37,2.26)	0.85
	Widowed	14(8.3%)	18(7.7%)	0.92(0.44,1.93)	1.05(0.47,2.36)	0.90
Education	Cannot read and write	43(25.6%)	66(28.1%)	1.15(0.70,1.87)	0.72(0.36,1.42)	0.34
	Read and write	23(13.7%)	40(17.0%)	1.30(0.71,2.36)	0.93(0.45,1.95)	0.86
	Primary	31(18.5%)	34(14.5%)	0.82(0.46,1.46)	0.58(0.30,1.13)	0.11
	Secondary and above	71(42.3%)	95(40.4%)	Ref.		
Residence	Rural	60(35.7%)	91(38.7%)	1.13(0.75,1.71)	0.82(0.47,1.41)	0.47
	Urban	108(64.3%)	144(61.3%)	Ref.		
Monthly Income (ETB)	<1500	50(12.4%)	89(22.1%)	1.83(1.132.98)	1.62(0.90,2.89)	0.10
	1500-3000	51(12.7%)	81(20.1%)	1.63(1.002.67)	1.54(0.89,2.65)	0.12
	>3000	67(16.6%)	65(16.1%)	Ref.		

Occupation	Housewife	27(16.1%)	42(17.9%)	1.63(0.90,2.94)	1.64(0.79,3.38)	0.18
	Farmer	42(25.0%)	72(30.6%)	1.79(1.07,2.99)	1.97(0.94,4.13)	0.07
	Merchant	32(19.0%)	57(24.3%)	1.86(1.07,3.24)	**1.88(1.03,3.45)***	0.04
	Gov't employee	67(39.9%)	64(27.2%)	Ref.		
Knowledge	Good	116(69.0%)	131(55.7%)	Ref.		
	Moderate	44(26.2%)	80(34.0%)	1.61(1.03,2.51)	1.59(0.98,2.57)	0.06
	Poor	8(4.8%)	24(10.2%)	2.65(1.15,6.14)	**2.53(1.04,6.12)***	0.04
Attitude	Good	15(8.9%)	18(7.7%)	Ref.		
	Moderate	34(20.2%)	34(14.5%)	0.83(0.36,1.92)	0.97(0.40,2.34)	0.94
	Poor	119(70.8%)	183(77.9%)	1.28(0.62,2.64)	1.23(0.563,2.70)	0.59

**p-value is significant at 0.05, Ref: reference group*

DISCUSSION

The findings of this study reveal significant insights into the magnitude and determinants of poor practice towards COVID-19 prevention measures among chronic disease patients. The overall prevalence of poor practice was 58.3% (95%CI (53.48-63.15%). This result is consistent with previous studies conducted in similar settings that reported high rates of suboptimal practice toward COVID-19 prevention among various populations (16, 17). However, the finding is higher compared to reports from Addis Zemen (47.3%) (14), Aksum Hospital (52.5%) (18), Dessie town hospitals (34.6%) (37), Ambo health facilities (10.4%) (20) The difference may be due to health facility-related factors like availability and accessibility of reliable health information systems, and socio-economic and individual characteristics of study participants. Moreover, the difference might be due to differences in the study period, sources, frequency and accessibility of COVID-19 information, media exposure, and application of governmental state of emergency. These studies were conducted during COVID-19 emergency times. There were high public and government enforcement of the COVID-19 prevention practice. Currently, these preventive measures are weakened, and people are practicing less.

Occupation has also been identified as a significant factor influencing poor practice among chronic disease patients. Those working as merchants had 1.88 times higher odds of poor practice than government employees. This suggests that the nature of merchants' work—characterized by frequent public interactions and less structured environments—may make it more challenging for them to follow preventive measures. This finding is consistent with other studies that have demonstrated varying levels of adherence to prevention strategies among different occupational groups. It highlights the need for targeted interventions and support for specific professions, such as merchandising, to enhance compliance with COVID-19 preventive practices (21).

The association between knowledge level and poor practice is another important finding. Patients with low knowledge had 2.53 times higher odds of poor practice compared to those with high knowledge levels. This finding is consistent with previous studies demonstrating a direct relationship between knowledge and behavior in COVID-19 prevention (14, 20, 22–25).

Interestingly, variables such as marital status, education, place of residence, and attitude were not found to be statistically significant predictors of poor practice in this study. This differs from some previous studies that have identified these factors as significant determinants of preventive behavior (26) (24). The variations in findings across studies may be attributed to differences in sample characteristics, contextual factors, and measurement methods utilized. The study utilized a cross-sectional design, which captures data at a specific point in time. This design limits the ability to establish causality or infer long-term trends. The study examined several factors associated with poor practice, such as age, occupation, and knowledge levels. However, other potential determinants, such as access to healthcare facilities, socioeconomic status, or cultural beliefs, were not explored. Incorporating a broader set of determinants in future studies would provide a more comprehensive understanding of poor practice among chronic disease patients.

Conclusion

The study revealed that a considerable proportion of chronic disease patients had poor adherence to COVID-19 prevention practices. Several factors were identified as significant contributors to poor practice, including Younger Age (18-40 years), occupation (being a Merchant), and having poor knowledge, which were significantly associated with poor COVID-19 prevention practices Based on these findings, public health authorities and policymakers should develop targeted interventions for younger adults (ages 18-40), particularly in merchant occupations. These initiatives should improve their understanding and compliance with COVID-19 prevention practices through tailored educational campaigns and community outreach, enhancing public health outcomes.

Abbreviations

AOR: Adjusted Odds Ratio, ARDS: Acute Respiratory Distress Syndromes, CI: Confidence Interval, COR: Crude Odds Ratio, COVID: Corona Virus Disease, CVD: Cardiovascular Disease, DM: Diabetes Mellitus, ETB: Ethiopian Birr, HIV: Human Immunodeficiency Virus, ICTV: International Committee on Taxonomy of Virus, KAP: Knowledge, Attitude, Practice, MERS: Middle East Respiratory Syndrome, MERS- Cove: East Respiratory Syndrome Corona Virus, OR: Odds Ratio, SARS-CoV-2: Severe Acute, Respiratory Syndrome Corona Virus Type 2, SPSS: Statistical Package for Social Sciences, WHO: World Health Organization

Consent for publication

Not applicable

Data availability

All relevant data are included in the manuscript.

Competing interests

The authors declare that they have no competing interests

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Authors Contributions

ML, MG, and AK have contributed to the conception of the research question, plan study design, data collection, statistical analysis, and data interpretation, as well as drafting, writing, and editing the manuscript. AB and AT were involved in Conceptualizing

the research idea, reviewing the research design, reviewing the study tool, and revising the last version of the manuscript sent for publication. All authors who contributed to data analysis, drafting, or revising the article have agreed on the journal to which the article will be submitted, gave final approval of the version to be published, and agreed to be accountable for all aspects of the work.

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