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Utilization Patterns and Counseling Practices of Alcohol-Based Hand Sanitizers during COVID-19 Pandemic in Bench Sheko Zone, Southwest Ethiopia

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ABSTRACT

Background: Coronaviruses infections are emerging respiratory viruses and are known to cause illnesses ranging from the common cold to severe acute respiratory syndrome. The most important ways to prevent the transmission of COVID-19 and other infectious diseases are frequent handwashing with soap, water and also applying alcohol-based hand sanitizers. Objective: To assess the utilization pattern and counseling practices of alcohol-based hand sanitizers during the COVID-19 pandemic in Bench-Sheko zone, Southwest Ethiopia from April 28 to June 05, 2020. Method: Community-based cross-sectional study was conducted to assess the utilization pattern and counseling practices of alcohol-based hand sanitizers during the COVID-19 pandemic in the Bench-Sheko zone, Southwest Ethiopia from April 28 to June 05, 2020. Data related to the utilization of alcohol-based hand sanitizer were collected from the selected household using the multistage sampling technique, whereas data related to counseling practices were collected from pharmacy personnel who have been working in the drug retail outlets found in the study setting. Data were entered into Epi data version 4.0.2 and then exported to statistical software package version 24.0 for data analysis. To identify the significant predictors of alcohol-based hand sanitizer utilization practice, binary and multivariable logistic regressions were carried out. Crude odds ratio and adjusted odds ratio with 95% confidence interval were calculated to determine the predictors. Result: From a total of 806 sampled populations, 784 (97.02%) of the study population responded to the questionnaire. The mean age of the study population was (34.27 ± 11.47) years. Male participants represented 53.8% of study participants. The majority (80.7%) of study participants had handwashing material for the prevention of COVID-19. Out of 784 study participants, 226 (28.8%) of them utilized alcohol-based hand sanitizer, whereas three fourth of them were non-alcohol-based hand sanitizer utilizer. Out of 29 pharmacy personnel, only 18 (62.1%) of them counseled their client during dispensing of alcohol-based hand sanitizers. Low-income status (AOR=2.71, CI; 1.18-6.19), single marital status (AOR=15.47, CI; 1.96-12.19), Lack of formal education (AOR=11.67, CI; 4.97-9.10), farmer (AOR=2.31, CI; 2.12-3.45) were significantly associated with non-utilization of alcohol-based hand sanitizer for the prevention COVID-19. Conclusion and recommendations: The utilization of alcohol-based hand sanitizer in the study area was low. About one-third of pharmacy personnel did not counsel their client during dispensing of alcohol-based hand sanitizer. Therefore, the training should be provided on rational use and dispensing of Alcohol-Based Hand Sanitizer (ABHS) for the community and pharmacy personnel respectively.

Keywords: Alcohol-based hand sanitizer, Counseling practice, Utilization pattern, Ethiopia

Abbreviations: ARD: Acute Respiratory Disease, ABHS: Alcohol-Based Hand Sanitizer, COVID: Corona Virus

Disease, MTU: Mizan-Tepi University, NAFDAC: National Agency for Food and Drugs Administration and Control, SARS: Severe Acute Respiratory Syndrome, WHO: World Health Organization

INTRODUCTION

Hospital and community-acquired infections are escalating and pose a serious public health problem worldwide [1]. Hands are considered to be the primary route for transmitting COVID-19 and other infections to individuals [2]. Hand hygiene is important to prevent many communicable diseases. The importance of hygiene is universally recognized and evidence-based. It is well known that hand hygiene is crucial to prevent and minimize healthcare-associated infections [3].

In early December 2019, a series of pneumonia cases with unknown reasons emerged in Wuhan, Hubei, China. High throughput sequencing from lower respiratory tract samples has revealed a novel coronavirus that was named 2019 novel Coronavirus (2019-nCoV) and also named SARS-CoV-2. This newly emerging coronavirus causes fatal Acute Respiratory Disease (ARD) resembling that of SARS-CoV [4,5].

The Centre for Disease Control and Prevention, the World Health Organization, and many other health experts promote hand hygiene as the most important measure in the prevention of COVID-19. Several studies have shown the importance of proper hand hygiene in reducing the incidence of nosocomial infections [6-10].

Alcohol-based hand sanitizers are commonly used and most of them contain between 60% and 85% alcohol [11]. However, the effectiveness of these sanitizers depends on the concentration of alcohol and the time of rubbing the sanitizer on hand. For instance, rubbing alcohol-based sanitizers for 25 seconds-30 seconds was reported to kill 99.99% of microorganisms on the hand. Sanitizers with at least 70% alcohol are suggested to kill 99.9% of the microorganisms on hands too [12].

Scientific studies have shown that after hand washing, as many as 80% of individuals retain some pathogenic bacteria on their hands. Hand washing removes the body's fatty acids from the skin, which may result in cracked skin that provides an entry portal for pathogens [13,14].

To overcome the limitations of plain hand washing, hand sanitizers introduced claiming to be effective against those pathogenic microorganisms as well as to improve skin condition due to the addition of emollients in it [15].

Hand sanitizers also effective in reducing gastrointestinal illnesses in households, Respiratory tract infections, and skin infections [6,16,17]. Furthermore, to reduce infections in healthcare settings, alcohol-based hand sanitizers are recommended as a component of hand hygiene.

Currently, since COVID-19 disease is a serious global concern, including our community, the utilization pattern of alcohol-based hand sanitizer, counseling practice of pharmacy personnel on alcohol-based hand sanitizers should be immediately evaluated to prevent the transmission of COVID-19 pandemic.

Up to our knowledge, there were no studies conducted in Ethiopia related to the utilization of alcohol-based hand sanitizers. Therefore, this study aimed to assess the utilization patterns and counseling practice of alcohol-based hand sanitizers in the Bench-Sheko zone, Southwest Ethiopia.

METHODS

Study Period and Study Area

This study was conducted in Bench-Sheko Zone, Southwest Ethiopia from April 28 to June 05/2020. Bench-Sheko zone is one of the zones in Southern nation nationality and people region. Mizan-Aman is the capital city of the Zone. It is 583 kilometers from Addis Ababa in a Southwest direction. In the Bench-Sheko zone, there is one Hospital called Mizan-Tepi University teaching hospital, 26 health centers, and 133 health posts. There are also 99 and 21 Primary and Medium clinics respectively.

Study Design

Community-based cross-sectional study.

Population

All households and pharmacy personnel of drug retail outlets found in the Bench-Sheko zone were a source of population. Whereas, all household head selected from selected Kebele of each woreda of Bench-Sheko and all pharmacy personnel in drug retail outlet that fulfill eligibility criteria were the study population.

Inclusion and Exclusion Criteria

Adults age greater than or equal to 18 years, permanent residents for greater than 6 months, and all pharmacy personnel working in drug retail outlets were included in the study whereas, participants who were not willing to participate were excluded from the study.

Sample Size Determination and Sampling Technique

The sample size was determined based on single population proportion formula: $n=[(Z_{\alpha/2})^2p(1-p)]/d^2$ with the assumption of 95% confidence interval ($Z_{\alpha/2}$=1.96), marginal error (d) of 5%, P=50% and design effect=2. After a 5% non-response rate was added, the required total sample size was 806. All pharmacy personnel in the drug retail outlet in Bench-Sheko were included. For utilization of alcohol-based hand sanitizer, a multi-stage sampling technique was used to select sample households that represent the entire zone. The first household was selected by the lottery method. An in-depth interview and simulation method was used for the assessment of counseling practice of pharmacy personnel regarding alcohol-based hand sanitizer.

Study Variables

The outcome variables were utilization of alcohol-based sanitizers and the counseling practice of pharmacy personnel on alcohol-based hand sanitizer, whereas independent variables included sex, age, marital status, ethnicity, religion, income, educational status, occupational status, source of information, Presence of health professional in the household, hand washing material, counseling time, availability, and affordability of alcohol-based hand sanitizer.

Data Collection Instrument and Procedure

The data collection tool was developed after reviewing relevant literature. Data were collected prospectively from selected households. The questionnaires contain 3 parts Part I: background data, Part II: Counseling related questions, and Part III: Utilization related questions. The sample size was proportionally divided into all woreda and kebele based on population size. The study households were taken from every six woreda and two town administrations based on the number of household size. The 33% of kebele were selected from each woreda randomly and households randomly were selected from the selected kebele. Accordingly, the sample size was proportionated for six woreda and two town administrations of Bench-Sheko's zone based on their population size (Figure 1).

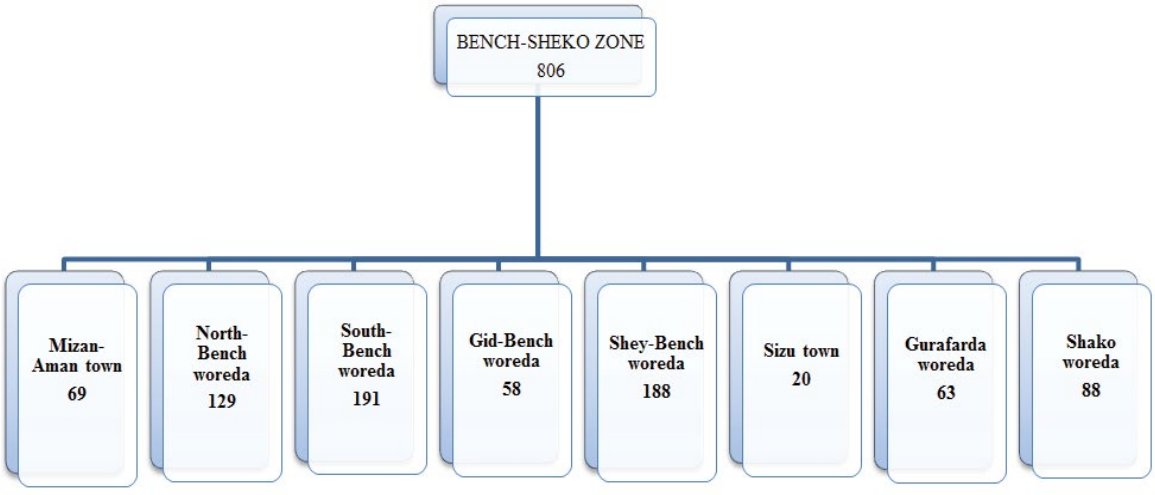

Figure 1 Sampling frame of the study population from different woreda of Bench-Sheko zone, Southwest Ethiopia

Data Quality Assurance and Management

Data qualities were assured by careful selection and collection of complete and appropriate data. The clarity and completeness checkup of data collection formats were undertaken before the actual data collection. Data clearing to be done every day, formats with insufficient information were excluded from the study to avoid an error. Then, the collected data were processed and retained cautiously in line with its objective. A 5% sample pretest was performed on randomly selected respondents before the beginning of the study.

Data Processing and Analysis

The data on the questionnaire were entered into Epidata manager version 4.0.2 and double-entry verification was made then data were exported to SPSS version 24 statistical packages for analysis. The data were explored to check outliers, missing data, and assumptions. During analysis frequencies and percentages were used to describe categorical variables while means and standard deviations were used to describe continuous variables. All statistical procedures were performed using Statistical Package for Social Sciences (SPSS) version 21.0 software.

Operational Definition

Counseling practice: If pharmacy personnel adhere to World Health Organization (WHO) standard counseling guidelines and counsel the client during the study period.

Ethical Clearance

The ethical clearance was obtained from Mizan-Tepi University research ethical review board. The Bench-Sheko zone administration office was informed about the purpose of the study to get cooperation. The confidentiality of the respondents' was secured. Informed consent was obtained from the respondents before conducting the study

RESULTS

Socio-Demographic Characteristic of Study Participants

From a total of 806 sampled populations, 784 (97.02%) of the study population responded to the questionnaires. The mean age of the study population was (34.27 ± 11.47) years. Among 784 participants, 422 (53.8%) were male, 560 (71.4%) were married, 353 (45%) were orthodox and 379 (48.3) were a farmer. Nearly one-third (32.4%) of the study participants had an average household income range of (500-1499). One hundred twenty-nine (16.5%) of the participants had health care professionals in their homes (Table 1).

Table 1 Socio-demographic characteristics of study participants in Bench-Sheko Zone, Southwest Ethiopia, 2020

Variables	Category	Frequency (%)
Sex	Male	422 (53.8)
	Female	362 (46.2)
Age (years)	18-24	131 (16.7)
	25-34	323 (41.2)
	35-44	208 (26.5)
	45-54	83 (10.6)
	55-64	25 (3.2)
	≥ 65	14 (1.8)
	Mean ± SD	34.27 ± 11.47
Religion	Orthodox	353 (45)
	Protestant	334 (42.6)
	Muslim	83 (10.6)
	Catholic	14 (1.8)
Marital status	Married	560 (71.4)
	Single	174 (22.2)
	Widow	29 (3.7)
	Divorced/separated	21 (2.7)

Educational status	Illiterate	146 (18.6)
	Primary school	326 (41.6)
	Secondary school	151 (19.3)
	University/college	161 (20.5)
Occupational status	Farmer	379 (48.3)
	Employed	132 (16.8)
	Merchant	111 (14.2)
	Daily labor	89 (11.4)
	Student	49 (6.3)
	Housewife	24 (3.1)
Ethnicity	Bench	376 (48)
	Kafa	186 (23.7)
	Amhara	114 (14.5)
	Sheko	60 (7.7)
	Shaka	23 (2.9)
	Other*	25 (3.2)
Average monthly income of household (ETB)	500-1499	254 (32.4)
	1500-2499	237 (30.2)
	2500-3499	126 (16.1)
	3500-4499	105 (13.4)
	≥4500	62 (7.9)
Presence of health professional in household	Yes	129 (16.5)
	No	655 (83.5)
*: Oromo, Gurage, Woliata, Silte		

COVID-19 Related Information of Study Participants

From a total of 784 study participants, 772 (98.5%) had COVID-19 information. The majority (80.7%) of study participants had handwashing material for the prevention of COVID-19. The highest family's educational level of one-third of study participants was a secondary school (Table 2). Two hundred twenty-five (28.7%) and 146 (18.6%) had got information of COVID-19 from health workers and Mass media respectively (Figure 2).

Table 2 COVID-19 related information of study participants in Bench-Sheko zone, Southwest Ethiopia, 2020

Variable	Category	Frequency (%)
COVID -19 information	Yes	772 (98.5)
	No	12 (1.5)
Source of information	Health worker	225 (28.7)
	Mass media	146 (18.6)
	Health worker+ Mass media	110 (14)
	All (HW+MM+SM+FF)	98 (12.5)
	Family and friends	88 (11.2)
	Social media	77 (9.8)
	Health worker+Family friends	28 (3.6)
Highest educational level	No formal education	63 (8)
	Primary education	256 (32.7)
	Secondary	273 (34.8)
	University/college	192 (24.5)
Accessibility of handwashing material	Yes	633 (80.7)
	No	151 (19.3)

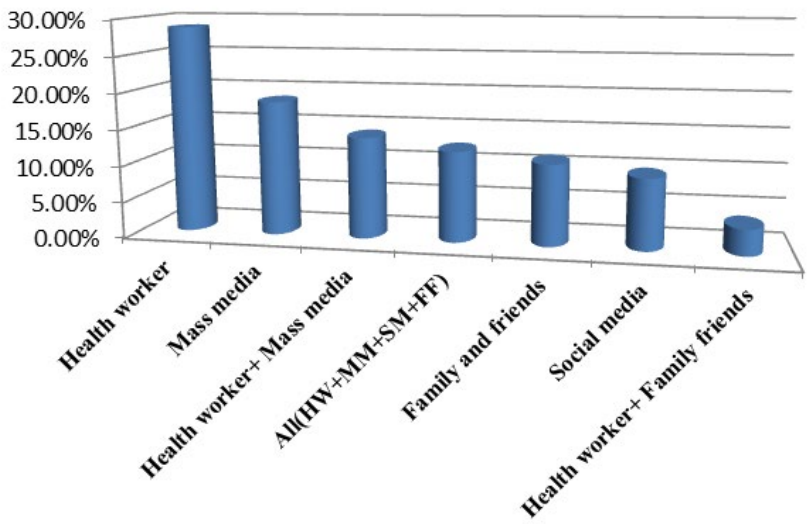

Figure 2 COVID-19 source of information of study participants in Bench-Sheko zone, Southwest Ethiopia, 2020; HW: Health Worker; MM: Mass Media; Social Media; FF: Family or Friends

Utilization of Alcohol-Based Hand Sanitizer Related Information

From a total of 784 study participants, 226 (28.8%) utilized alcohol-based hand sanitizers (Figure 3). Five hundred fifty-eight (71.2%) of the community did not utilize ABHS for the prevention of COVID-19 (Figure 3). The major reasons for the majority of study participants did not utilize alcohol-based hand sanitizer were 257 (46.1%) non-accessibility and 160 (28.7%) unaffordability of Alcohol-based hand sanitizer. One hundred forty (61.9%) alcohol-based hand sanitizer users obtained ABHS from drug retail outlets (Figure 4). The majority of ABHS users (77.9%) utilized ABHS when they contact any material. From 226 (28.8%) ABHS users, 207 (91.6%) of them knew at least one precaution of ABHS. Half of the study participants knew the type of precaution of ABHS as keep away out of reach of children. Nearly two-thirds (69.1%) of study participants applied ABHS for less than 20 seconds at a time (Table 3).

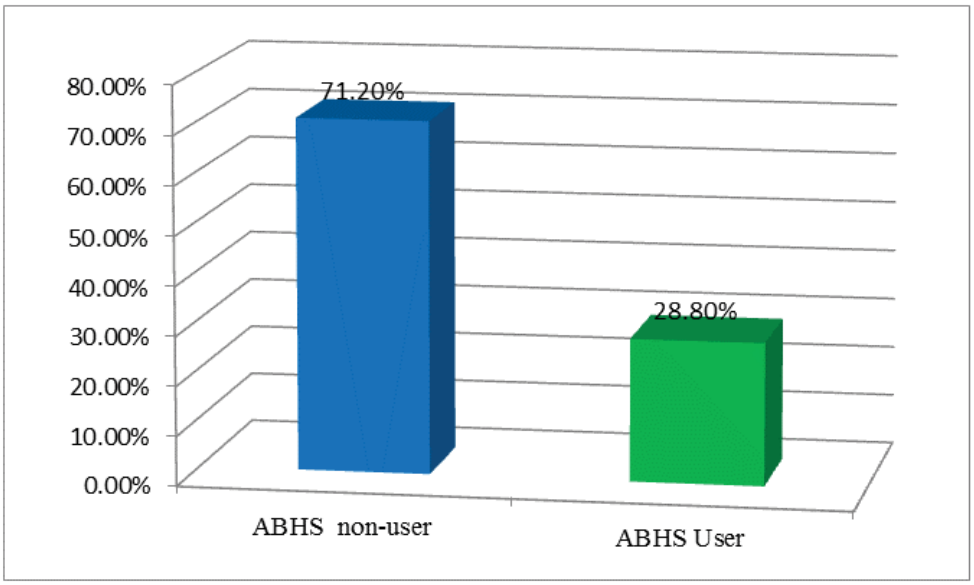

Figure 3 Prevalence of alcohol-based sanitizer utilization among study participant in Bench-Sheko zone, 2020

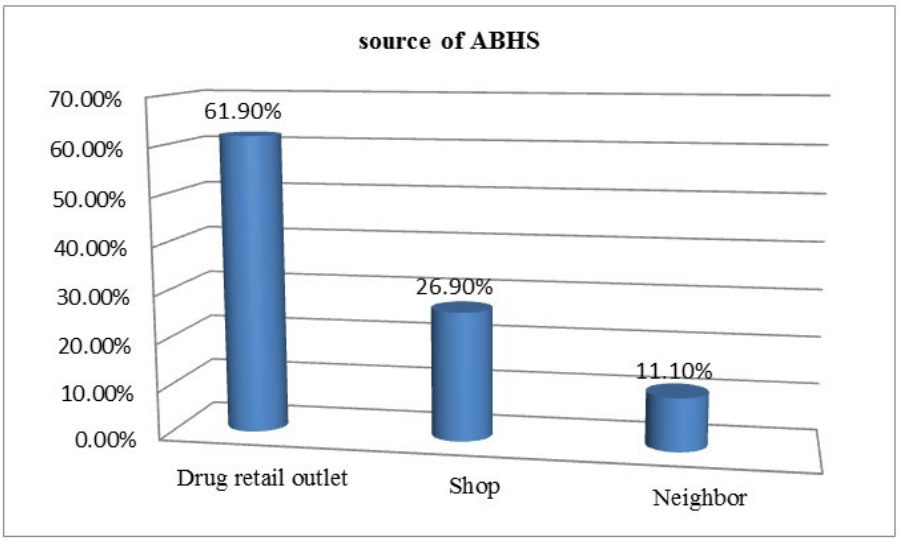

Figure 4 Community's source of alcohol-based hand sanitizer in Bench-Sheko zone, Southwest Ethiopia, 2020

Table 3 Utilization of ABHS in Bench-Sheko, Southwest Ethiopia, 2020

Variable	Category	Frequency
Frequency of ABHS	Once-daily	12 (5.3)
	Twice daily	23 (10.2)
	Three-time daily	21 (9.3)
	PRN	170 (75.2)
Reason for not used ABHS	I cannot afford	160 (28.7)
	It is not accessible	257 (46.1)
	I have no information about ABHS	63 (11.3)
	I do not think it is effective	78 (13.9)
When you used ABHS	When I contact any material	176 (77.9)
	During transportation	39 (17.3)
	Other*	11 (4.9)
Route of administration	Topical	225 (99.6)
	Oral	1 (0.4)
Site of application	Hand only	177 (78.3)
	Hand and face	49 (21.7)
Knowing Precaution of ABHS	Yes	207 (91.6)
	No	19 (8.4)
Type precaution identified	Keep away out of reach of children	106 (51.2)
	For external use only	72 (34.8)
	Keep away from the flammable object	29 (14)
Amount used at a time	<15 ml (half palm)	204 (90.3)
	>15 (full palm)	22 (9.7)

Duration of use at a time(s)	<20	156 (69.1)
	21-40	36 (15.9)
	41-60	29 (12.8)
	>60	5 (2.2)
*: during shopping, going to the religious area and for all listed above		

Socio-demographic Characteristics and Counseling Practice of Pharmacy Personnel

Out of 29 pharmacy personnel, 16 (55.2%) were male. Seventeen (58.3%) of them were in the age category of 18-34 and 20 (69.0%) of them were married. Twenty-five (86.2%) of them had a diploma (Table 4). Out of the total of 29 respondents, only 18 (62.1%) of them counseled their client during dispensing. Of 18 (62.1%) pharmacy personnel who counsel their client, all of them counsel the client through verbal communication. The major reason for giving only verbal communication was being too busy, 9 (50%) and followed by the expectation of consumers has already got verbal information 5 (27.8%) (Table 5).

Table 4 Socio-demographic characteristics of pharmacy personnel in Bench-shako, Zone South West Ethiopia (N=29), 2020

Variable	Category	Frequency (%)
Sex	Female	13 (44.8)
	Male	16 (55.2)
Age category	18-24	17 (58.6)
	35-54	12 (41.4)
Religion	Protestant	13 (44.8)
	Orthodox	11 (37.9)
	Muslim	5 (17.2)
Marital status	Married	20 (69)
	Single	9 (31)
Educational level	Diploma	25 (86.2)
	Degree	4 (13.8)

Table 5 Pharmacy personnel response towards client counseling in Bench-Sheko, Zone South West Ethiopia (N=29), 2020

Variable	Category	Frequency (%)
Do you counsel your client when they buy ABHS?	Yes	18 (62.1)
	No	11 (37.9)
Which counseling methods do you prefer most of the time?	Verbal	18 (100)
	Written	0 (0)
If you give verbal information only, what is your reason (s) for not providing written information?	The pharmacy is too busy	9 (50)
	The consumer has already got verbal information	5 (27.8)
	The consumer is not interested	2 (11.1)
	other	2 (11.1)

What is the average length of time (in minutes) spent in providing verbal information (minutes)	2	5 (27.8)
	3	8 (44.4)
	4	4 (22.2)
	5	1 (5.6)
Do you explain the purpose/importance of counseling to the client?	Yes	10 (55.6)
	No	8 (44.4)
Do you emphasize the benefits of the ABHS if they are taken correctly?	Yes	5 (27.8)
	No	13 (72.2)
Do you listen to your client carefully and respond with appropriate empathy?	Yes	18 (100)
	No	0 (0)
Do you ask the client if they have any concerns or questions?	Yes	4 (22.2)
	No	14 (77.8)
Do you ask whether the client has time to discuss the medicine with you?	Yes	5 (27.8)
	No	13 (72.2)
common drug-drug interaction	Yes	2 (11.1)
	No	16 (88.9)
Inform/counsel on major side effects	Yes	2 (11.1)
	No	16 (88.9)
Counsel means/ways of administration (how to administered)	Yes	11 (61.1)
	No	7 (38.9)
Storage place	Yes	6 (33.3)
	No	12 (66.7)
Check client understanding by asking to repeat back	Yes	3 (16.7)
	No	15 (85.3)
Is there any presence counseling area?	No	29 (100)

Factor Affecting Alcohol-Based Hand Sanitizer Utilization

Low-income status (AOR=2.71, CI; 1.18-6.19), single marital status (AOR=15.47, CI; 1.96-12.19), Lack of formal education (AOR=11.67, CI; 4.97-9.10), farmer (AOR=2.31, CI; 2.12-3.45) were significantly associated with non-utilization of alcohol-based hand sanitizer for the prevention COVID-19 (Table 6).

Table 6 Bivariate and Multivariate logistic regression analysis result of factors associated with Utilization pattern of alcohol-based hand sanitizer during COVID-19 in Bench-Sheko zone, 2020

Variables	Category	ABHS utilization		COR (95% CI)	AOR (95% CI)	p-value
		Yes (n=226)	No (n=558)			
Income	500-1499	168 (66.1%)	86 (33.9%)	2.88 (1.79-4.62)	2.71 (1.18-6.19)	0.018*
	1500-2499	55 (23.2%)	182 (76.8%)	1.70 (1.08-2.66)	0.34 (0.17-0.69)	0.92
	2500-3499	12 (10.4%)	103 (89.6%)	7.44 (3.71-15.06)	0.67 (1.29-1.92)	0.36
	3500-4499	19 (30.6%)	43 (69.4%)	1.97 (1.02-3.78)	0.55 (0.28-0.98)	0.08
	≥ 4500	54 (33.4%)	62 (82.6%)	1	1	

Marital status	Divorced/ separated	0 (0%)	21 (100%)	2.59 (0.34-0.91)	3.51 (0.23-0.94)	0.99
	Widow	1 (3.4%)	28 (96.6%)	0.67 (0.42-0.86)	1.02 (1.63-2.53)	0.93
	Single	68 (39.1%)	106 (60.9%)	10.90 (1.40-8.08)	15.47 (1.96-12.19)	0.009*
	Married	157 (28%)	403 (72%	1	1	
Educational status	No formal education	11 (7.5%)	135 (92.5%)	19.59 (9.81-29.13)	11.67 (4.97-9.10)	0.0001*
	Primary school	65 (19.9%)	261 (80.1%)	6.41 (4.22-9.79)	5.11 (2.8-27.1)	0.067
	Secondary School	51 (33.8%)	100 (66.2%)	3.10 (1.97-4.97)	2.58 (1.40-4.73)	0.078
	University/college	99 (61.5%)	62 (38.5%)	1	1	
Occupational status	Farmer	52 (13.7)	327 (86.3)	11.00 (6.94-17.49)	2.31 (2.12-3.45	0.013*
	Merchant	36 (32.4%)	75 (67.6%)	2.14 (1.23-3.70)	0.16 (0.04-0.68)	0.87
	Daily labor	40 (44.9%)	49 (55.1%)	3.64 (2.14-6.21)	0.18 (0.07-0.79)	0.09
	Student	11 (22.4%)	38 (34.9%)	12.25 (3.47-4.37)	0.91 (0.19-4.51)	0.91
	Employed	84 (63.6%)	48 (36.4%)	1	1	

*: Statistically significant p-value

DISCUSSION

Ethanol-based topical antiseptic hand rubs, commonly referred to as Alcohol-Based Hand Sanitizers (ABHS), are routinely used as the standard of care to reduce the presence of viable bacteria on the skin and are an important element of infection control procedures in the healthcare industry [18].

In this finding, 772 (98.5%) of study participants had COVID-19 information. The most source of their COVID-19 information was 225 (28.7%) health workers and 146 (18.6%) mass media. This might be due to global concern and the federal ministry of health give due attention in providing information of COVID-19 to the community through health extension worker and other health providers.

The use of hand sanitizers now in the community has particularly gained popularity in the world including Ethiopia since the emergence of Covid-19. This has led to the development, production, and importation of several hand sanitizers by various companies with the aim of commercialization as well as supporting the health care system and community in preventing transmission of disease specially COVID-19 [7,19].

The prevalence of alcohol-based hand sanitizer utilization in the study area was 28.8% and more than two-thirds of the participants did not utilize alcohol-based hand sanitizers. The result of this finding showed that about three-fourth of ABHS users utilized ABHS in PRN bases and used these sanitizers when they contact any materials. This should be promoted since it is a key element to prevent the spread of COVID-19 and other infectious diseases by ensuring proper hand hygiene.

In this finding, about 61.9% of alcohol-based hand sanitizer users obtained it from the drug retail outlets and most all the study participants apply ABHS topically. This is in line with the finding reported by Maier, et al. [18]. The majority of the study participants (78.3%) applied ABHS only on their hands and about 91.6% of them knew at least one precaution of ABHS and nearly two-thirds (69.1%) of study participants rubbed ABHS on their hands for less than 20 seconds at a time. This showed that the participants did not apply alcohol-based hand sanitizer appropriately. Because rubbing alcohol-based sanitizers for 25 seconds-30 seconds was reported to kill 99.99% of microorganisms on hand [12].

The result of this study showed about (62.1%) of pharmacy personnel counsel their client during dispensing of Alcohol-based hand sanitizers through verbal communication. The major reasons for giving only verbal communication were pharmacy personnel's was too busy, 9 (50%).

Multiple logistic regression analysis of this finding showed that low-income status was significantly associated with

non-utilization of ABHS for prevention of COVID-19. A study was done in Addis Ababa also showed that many peoples engaged in selling different ABHS in the streets of the city due to the relatively cheaper price than products obtained from legal sources [20]. This might due to the perception of these people as the alcohol-based hand sanitizer is so expensive and they cannot afford it with their current income.

Lack of formal education was significantly associated with the non-utilization of ABHS. The possible justification might be formal education provide basic infectious disease concept, mode of transmission and its prevention. Similarly, in this finding, being single in marital status was significantly associated with non-utilization of ABHS. In this study, being a farmer was significantly associated with the non-utilization of ABHS. This might be due to the majority of the participants were non-accessible to the alcohol-based hand sanitizer since they have been lived in rural which is far from the town.

CONCLUSION

The utilization of alcohol-based hand sanitizer in the study area was low. The major reasons for the non-utilization of alcohol-based hand sanitizers were the non-accessibility and unaffordability of alcohol-based hand sanitizers. Two-third of pharmacy personnel counsel their client during dispensing of Alcohol-based hand sanitizer. Being single marital status, low-income status, lack of formal education, and being a farmer was significantly associated with non-utilization of alcohol-based hand sanitizer. Therefore, Mizan-Tepi University and other stakeholders have to provide training on the rational use and dispensing of ABHS for the community and pharmacy personnel respectively.

DECLARATIONS

Conflicts of Interest

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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Author Contributions

All authors made substantial contributions to conception and design, acquisition of data, analysis, and interpretation of data, took part in revising the article; gave final approval of the version to be published, and agreed to be accountable for all parts of the work.

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Mizan-Tepi University had funded this paper. However, the finder has no role in study design, method, data collection, and analysisrs.

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