

Compliance of Elderly with Preventive Behaviors Regarding COVID-19 at Rural Areas in El Gharbia Governorate

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Abstract

Background: COVID-19 is a novel and highly contagious disease that has worse and serious side effects among all age groups, but elderly are the most affected. COVID-19 increases the risk of elderly for hospitalization and dying, as the elderly has multiple chronic condition and low immunity. Thus, compliance with preventive behaviors is very essential to save elderly life. **Aim of the study:** to determine compliance of elderly with preventive behaviors regarding COVID-19 at rural areas in El Gharbia Governorate. **Subjects and method: Study design:** A descriptive cross sectional research design was utilized in this study. **Setting:** This study was conducted at rural villages in El Gharbia Governorate at Bolkina, Shndalat and Elgaafaria rural villages through home visits. **Study subjects:** A convenience sample of 400 elderly was utilized in this study. **Tools:** One tool was used to collect the necessary data. It consisted of three parts as follows: Part (1): Socio-demographic characteristics of rural elderly people and health history. Part (2): Knowledge of rural elderly about COVID 19. Part (3): Reported practices of rural elderly regarding preventive behaviors of COVID 19. **Results:** It was found that, nearly one third (30%) of the studied elderly had poor knowledge regarding COVID 19. Also, most of them (70%) had unsatisfactory practice score. There was significant positive correlation between total knowledge score and total practice score of the studied elderly. **Conclusion and recommendations:** Based on our study findings, we can conclude that, compliance of most rural elderly regarding preventive behaviors of COVID 19 is unsatisfactory and need improvement. So, we can recommend that: health education programs about preventive behaviors of COVID-19 should be conducted for elderly in rural areas.

Keywords: Compliance, COVID-19, elderly people.

Introduction

Corona viruses (CoVs) have been associated with significant outbreaks in East Asia and the Middle East. Severe acute respiratory syndrome (SARS) and the Middle East respiratory syndromes (MERS) emerged in 2002 and 2012, respectively. At present, a novel corona virus, the severe acute respiratory syndrome corona virus 2 (SARS-CoV-2), causing the Corona virus Disease 2019 (COVID-19), has emerged in late 2019. The novel corona virus disease 2019 (COVID-19), originated in Wuhan city of China, has spread rapidly around the world including Egypt, sending billions of people into lockdown^(1,2).

As declared by the World Health Organization (WHO), corona virus is a pandemic. Many countries responded to COVID-19 through inward and outward travel restrictions to prevent the spread of the epidemic. Several measures were taken by public health experts and government officials, including social distancing, asking people to work at home (self-isolation or quarantine), strengthening health facilities to control the disease as well as the closure of places with large gatherings such as gyms, museums, movie theaters, swimming pools and educational institutions⁽³⁾.

Elderly people are more getting affected by the virus than adults and children.

According to the Central Agency for Public Mobilization and Statistics (CAPMAS) (2019), there are 6.5 million elderly in Egypt. Older people are very vulnerable to infectious diseases due to several factors including; deterioration of their health status, decreased immunity and having multiple chronic conditions. Compared with other age groups, respiratory infections including COVID 19 are more likely to lead to serious consequences in older people due to the risk of morbidity and mortality from complications. About 90% of all in-deaths occur in elderly population⁽⁴⁻⁶⁾.

Corona viruses can cause clinical diseases in humans extending from the common cold to more severe respiratory diseases that are characterized by high fever, severe inflammation, cough, and internal organs dysfunction that can even lead to death. COVID-19 patients reported also atypical clinical manifestations in which the only reporting symptom was fatigue. These patients may lack respiratory manifestations such as fever, cough, and sputum. COVID-19 can occur or be transmitted through direct contact with patients, droplets, and fomites. Recent studies demonstrated that aerosol and fomite transmission of SARS-CoV-2 is feasible, as the virus can remain viable in aerosols for multiple hours and on surfaces up to days^(2,7,8).

It is very important to improve compliance of elderly people with preventive behavior regarding COVID-19. Compliance can be defined as the extent to which a person's behavior coincides with medical or health care advice. Preventive behaviors to COVID-19 focus mainly on hand washing, cough etiquette, and oral hygiene in addition to that well balanced diet including excessive amount of fluids, adequate period of rest and sleep and practicing exercise such as walking (healthful life style). Compliance of elderly people can be enhanced through the assistance of community health nurse and the elderly people family ⁽⁹⁻¹¹⁾.

Community health nurse has a challenging role in prevention and control of COVID-19 through encouraging elderly people to improve their compliance with preventive behaviors. These preventive behaviors include: implementing personal hygiene and public health behaviors such as hand washing and social distancing are necessary to curb the spread of coronavirus. Personal hygiene is considered the most effective preventive measure including hand washing effectively for 20 seconds or using alcohol before touching mouth, eyes and nose and taking shower after return to home, covering mouth and nose with tissue during coughing or sneezing or using elbow ⁽¹²⁻¹⁵⁾.

Wearing a mask during getting out of home or presence of gatherings is an essential preventive measure. Also, disinfecting surfaces frequently with alcohol or chlorine 5% as well as avoiding large gatherings including specific cultural and faith practices such as mass prayer gatherings and large weddings, keeping distance at least 3 feet (1 meter from others) ^(9, 16).

Elderly are the most exposed to destructive consequences of COVID-19. Up till now, there are no proved pharmaceutical measures for treating COVID-19 such as medications and vaccines. Thus, compliance with preventive measures is very important especially for the elderly. These measures can save elderly's life. Additionally, preventive measures help to reduce cost of hospitalization and treatment needed in case of COVID-19, especially for elderly as their condition becomes deteriorated and need ventilators, while it may not be available to all ^(6, 16). So that, the aim of this study is to determine the compliance of elderly people with preventive behaviors regarding COVID-19 at rural areas in El Gharbia Governorate.

Aim of the study

The aim of this study was to determine compliance of elderly with preventive behaviors regarding COVID-19 at rural areas in El Gharbia Governorate.

Research Questions

What is the degree of compliance of elderly with preventive behaviors regarding COVID-19 at rural areas in El Gharbia Governorate?

Subjects and Method

Study design:

A descriptive cross sectional research design was utilized in this study.

Study setting:

This study was conducted at rural villages in El Gharbia Governorate at Bolkina, Shndalat and Elgaafaria rural villages through home visits.

Study subjects

A convenience sample was utilized in this study. The sample size and power analysis was calculated using Epi-Info software statistical package created by World Health organization and center for Disease Control and Prevention, Atlanta, Georgia, USA version 2002. The sample size was found at $N > 383$. The sample increased to 400 elderly, meeting the following criteria:

- Aged 60 years and above,
- Included both sexes.
- Don't have communication problems and accept to participate in the study.

Tools of the study

Interview questionnaire was used in order to collect the needed data. It consisted of three parts as following:

Part (1): Socio-demographic characteristics of rural elderly people and health history:

- **Socio-demographic data** included data about age, sex, marital status, level of education, occupation before retirement, family size, number of sleeping rooms and family income.
- **Health history of the elderly** as number and causes of previous hospitalization, types of chronic diseases, history of previous attack with respiratory tract infection, its types, previous immunization, history of annual influenza and pneumococcal vaccination and history of smoking.

Part (2): knowledge of rural elderly people about COVID 19⁽²⁻⁸⁾.

This part was developed by the researchers based on related literature to assess rural elderly people knowledge about COVID 19. It covered the following area: definition, causes, risk factors, signs and symptoms, mode of transmission, complication, treatment and prevention of COVID 19.

The scoring system: The items of the questionnaire were checked with a model key answer, which prepared by the researchers. Correct answer was given score one while incorrect or don't know answer was given score zero.

- These scores summed up and the total score converted into a percent score

The total score of knowledge was calculated by summation of the score of all questions related to knowledge about COVID 19 and it equaled (31) points.

The scoring system for knowledge will be as following

- Poor knowledge < 50 % of the total score.
- Fair knowledge 50 - < 70 % of the total score.
- Good knowledge \geq 70 % of the total score.

Part (3): Reported practice of rural elderly people regarding preventive behaviors of COVID 19⁽⁹⁻¹⁶⁾.

It was developed by the researchers to assess rural elderly compliance with preventive behaviors regarding COVID 19 and included the following items:

Hand washing, cough etiquette and oral hygiene. **Compliance of hand washing**, included ways, techniques, time, frequency, indication and duration of hand washing **while compliance of cough etiquette** included cover the mouth and nose with tissue or with elbow during coughing or sneezing and **compliance to oral hygiene** included care of the mouth and using tooth brush. In addition to that compliance of healthful life style (nutrition, exercise and adequacy of sleeping period)

The scoring system for practices

- A three point Likert Scale was used as follows: rarely or not done was scored (0), sometimes done was scored (1) and always done correctly was scored (2).
- These scores were summed up and the total score equal (38) points then converted into a percent score. The higher score indicates a greater level of rural elderly people compliance.

The scoring systems for practices were as follow:

- Unsatisfactory practice < 60 % of the total score.
- Satisfactory practice \geq 60 % of the total score.

Method

1- **An official permission** to conduct the study was obtained from the dean of the faculty of nursing directed to Mayors of the villages to facilitate data gathering.

2- Ethical and legal considerations:

- An informed consent was obtained from all studied elderly people after providing appropriate explanation about the purpose of the study.
- Each studied elderly subject was informed that she/he can withdraw from the study at any time she/he wants.

- The study was safe and did not cause any pain or risks for the studied elderly people.
- Privacy and confidentiality were put into consideration regarding the collected data.

3- Developing the tools:

The tool of the study was developed by the researcher based on literature review.

- 4- The study tool was tested for its reliability by using Chronabach's alpha test, it was computed and it was found to be = (0.735) for all the study parts.

5- The pilot study:

A pilot study was carried out by the researcher on 10% of the sample for testing the tool/s for its clarity, applicability and to identify obstacles that may be encountered with the researcher during data collection. Accordingly, the necessary modification was done. This sample wasn't included in the study.

6- The actual study:

- The data were collected over a period of 3 months starting from first of June to the end of August 2020. Home visit was used to reach the study subject.
- The researchers introduced themselves to each elderly people and explained the purpose and importance of the study.
- At the beginning of the interview confidentiality of the elderly information were considered. This

helped to gain the elderly people cooperation.

- The structured interview was done individually to each elderly in their homes.
- The average time spent for collecting data from each elderly was approximately 20-25 minutes.

7- Statistical analysis of the data:

The statistical data were organized, tabulated and statistically analyzed using statistical package for social studies (SPSS) version 23. The mean, standard deviation and range were calculated for quantitative data. Pearson's correlation coefficient r was used to identify correlation between variables. A significance was adopted at $P < 0.05$ for interpretation of results of tests of significance.

Results

Table (I) shows the distribution of the studied elderly people according to their socio- demographic characteristics. It reveals that, the age of the studied elderly ranged from 60-90 years with a mean of 66.63 ± 6.989 , and most of them (70%) their age was $60 < 70$ years and they were married. About one half of the studied elderly were males and they were working. Nearly two thirds of them were illiterate or read and write. Also, family income was just enough for the majority of them (80%), and the pension was the source of

income for more than three quarters of elderly. This table also, showed that the vast majority of the studied elderly (93%) were living with their family, and nearly three quarters of them have family members that help them in buying preventive services against corona. The crowding index was 0.3- 1.9 for more than two fifth of them.

Table (2) shows the distribution of the studied elderly people according to their past and current medical history. It reveals that, nearly one half of the studied elderly had previous hospitalization, most of them (71.4%) have been admitted hospital from 1-2 times. Only one fifth of them have no chronic diseases, while nearly one third of them (31%) had hypertension, one quarter (24%) had DM, and (23%) had osteoarthritis disease. Regarding vaccination with influenza or pneumococcal vaccine, the majority of the studied elderly (91%) were not vaccinated, and more than three quarters (78%) were not smokers.

Table (3) shows the distribution of the studied elderly people according to their history of respiratory disease in the past year. It shows that the majority of the studied elderly (80% & 89%) had influenza and bronchial asthma in the past year, and about one third of them (34%) had acute bronchitis, while only 4% had pneumonia and 2% had COPD.

Table (4) shows the distribution of the studied elderly people regarding to their level of knowledge regarding COVID 19. It illustrates that, only one quarter of the studied elderly had good knowledge score regarding COVID 19, while more than two fifth (45%) of them had fair knowledge score and 30% had poor knowledge score regarding it with a statistically significance difference between them.

Table (5) shows the distribution of the studied elderly people regarding to their practices about preventive measures for COVID 19. It reveals that, slightly more than two thirds of the studied elderly people (71% & 69%) always wash their hands with soap and water and discard tissue papers after coughing and sneezing respectively while only one quarter (26%, 27%, 25% and 27%) always wash hands for 20 seconds and avoid touch hands to eyes, nose and mouth and sometimes use alcohol to disinfect hands respectively and change and disinfect their clothes after returning their homes.

It was also observed that slightly less than half of the studied elderly people (47%, 44%, 49%, 45% and 47%) were always wash their hands with soap and water after coughing and sneezing, avoid hand shaking, practice exercise such as walking, practice oral hygiene such as brushing the teeth and sometimes keep at least one

meter between themselves and other people respectively.

Furthermore, slightly more than half (57% and 61%) of the studied elderly people were always avoid overcrowding places and drink adequate amount of water/day (6-8 cups of water/ day) respectively. While, slightly more than one third of them (39%) were sometimes use upper arm for coughing and sneezing when tissue papers weren't available.

In addition to, most of the studied elderly people (77%, 79% and 80%) were always avoid contact with infected people, eating healthy diet and take adequate period of rest and sleep respectively. on the other hand, only 29% of them were always change and disinfect their clothes after returning your home.

Table (6) shows correlation between total knowledge score, total practice score and socio-demographic data of elderly people. It was found that, there was significant positive correlation between total knowledge score, job before retirement, level of education and total practice score of the studied elderly. In addition to that level of education was positively correlated with job before retirement.

Figure (1) shows the distribution of the studied elderly people regarding to their total practice score about preventive measures for COVID 19. It reveals that,

most of the studied elderly (70%) had unsatisfactory practice score, while only 30% of them had satisfactory practice score.

Table (I): Distribution of the studied elderly people according to their socio-demographic characteristics

Socio- demographic characteristics of the studied elderly	The studied elderly people (n=400)	
	N	%
Age in years		
60 < 70	280	70.0
70 < 80	96	24.0
More than 80years	24	6.0
Range	60-90	
Mean ± SD	66.63 ± 6.989	
Sex		
Male	204	51.0
Female	196	49
Marital status		
Single	0	0.0
Married	280	70.0
Widow	120	30.0
Occupation before retirement		
Not working or house wives	164	41.0
Working	236	59.0
Education		
Illiterate or read and write	248	62.0
Basic education	48	12.0
Secondary education	80	20.0
University education& more	24	6
Family income		
Just enough	320	80.0
Not enough	80	20.0
Source of elderly income#		
Pension	308	77.0
Property and land	116	29.0
Family support	100	25.0
Social support	20	5.0
With whom do you live		
With my family	372	93.0
Alone	28	7.0
Family members help you in buying preventive service against corona		
Yes	292	73.0
No	108	27.0
Crowding index		
0.3-1.9	180	45.0
2-2.9	152	38.0
3-4	68	17.5
Mean ± SD	1.720 ± 0.739	

(# More than one choice)

Table (2): Distribution of the studied elderly people according to their past and current medical history

past and current history of the studied elderly	The studied elderly people (n=400)	
	n	%
Previous hospitalization		
Yes	196	49.0
No	204	51.0
If yes, number of admission to the hospital	n= (196)	
1-2	140	71.4
3 or more	56	28.6
# Chronic diseases		
Not have chronic disease	80	20.0
Osteoarthritis diseases	92	23.0
Hypertension disease	124	31.0
Diabetes mellitus disease	96	24.0
Respiratory diseases	28	7.0
Heart diseases	48	12.0
Liver diseases	24	6.0
Digestive system diseases	8	2.0
Kidney stones	4	1.0
Osteoporosis	28	7.0
Previous vaccination with influenza vaccine or pneumococcal vaccination		
Yes	36	9.0
No	364	91.0
Are you smoker?		
Yes	88	22.0
No	312	78.0

(# More than one choice)

Table (3): Distribution of the studied elderly people according to their history of respiratory disease in the past year

History of respiratory disease in the past year of the studied elderly	The studied elderly people (n=400)	
	n	%
Influenza		
Yes	320	80.0
No	80	20.0
Bronchial asthma		
Yes	356	89.0
No	44	11.0
Pneumonia		
Yes	16	4.0
No	384	96.0
Chronic obstructive pulmonary disease		
Yes	8	2.0
No	392	98.0
Acute bronchitis		
Yes	136	34.0
No	264	66.0

Table (4): Distribution of the studied elderly people regarding to their level of knowledge about COVID 19

level of knowledge about COVID 19 of the studied elderly	The studied elderly people (n=400)	
	n	%
Good	100	25.0
Fair	180	45.0
Poor	120	30.0
Mean ± SD	1.95 ± 0.744	
t	26.22	
P	0.001*	

*Significant at (p < 0.05)

Table (5): Distribution of the studied elderly people regarding to their reported practices regarding preventive measures for COVID 19

Reported practices regarding preventive measures for COVID 19 of the studied elderly	The studied elderly people (n=400)					
	Rarely		Some times		Always	
	N	%	N	%	N	%
Hand washing with soap and water	20	5.0	96	24.0	284	71.0
Hand washing with soap and water for 20 seconds	92	23.0	204	51.0	104	26.0
Use alcohol to disinfect hands	248	62.0	100	25.0	52	13.0
Avoid touching hands to eyes, mouth and nose.	72	18.0	220	55.0	108	27.0
Using upper arm for coughing and sneezing when tissue papers aren't available.	92	23.0	156	39.0	152	38.0
Discard tissue papers in the basket after coughing and sneezing.	48	12.0	76	19.0	276	69.0
Wash hands with soap and water after coughing and sneezing.	72	18.0	140	35.0	188	47.0
Avoid hand shaking relatives and other people	52	13.0	172	43.0	176	44.0
Avoid overcrowding places	40	10.0	132	33.0	228	57.0
Keep at least one meter between you and other people.	84	21.0	188	47.0	128	32.0
Wear mask outside home and in crowding areas.	136	34.0	96	24.0	168	42.0
Avoid contact with infected people	20	5.0	72	18.0	308	77.0
Eating healthy diet contains fruits and vegetables.	20	5.0	64	16.0	316	79.0
Drink adequate amount of water/day (6-8 cups of water/ day)	40	10.0	116	29.0	244	61.0
Practice exercise such as walking	76	19.0	128	32.0	196	49.0
Take adequate period of rest and sleep (6-8 hrs.)	20	5.0	60	15.0	320	80.0
Change and disinfect your clothes after returning your home.	176	44.0	108	27.0	116	29.0
Practice oral hygiene such as brushing the teeth.	80	20.0	140	35.0	180	45.0

Table (6): Correlation between total knowledge score, total reported practice score and socio-demographic data of elderly people

Variables	Job before retirement	Age	Level of education	Total knowledge score	Total practice score
	r	R	r	r	r
	p	p	p	p	p
Job before retirement	-	.039 .732	.706** .000	.325** .000	.104 .302
Age	.035 .732	-	-.183- .069	-.056 .578	.030 .763
Level of education	.706** .000	-.183- .069	-	.325** .000	.134 .183
Total knowledge score	.325** .000	-.056- .578	.325** .001	-	.325** .000
Total practice score	.104 .302	.030 .763	.134 .183	.553** .000	-

** Correlation is significant at the 0.01 level (2-tailed)

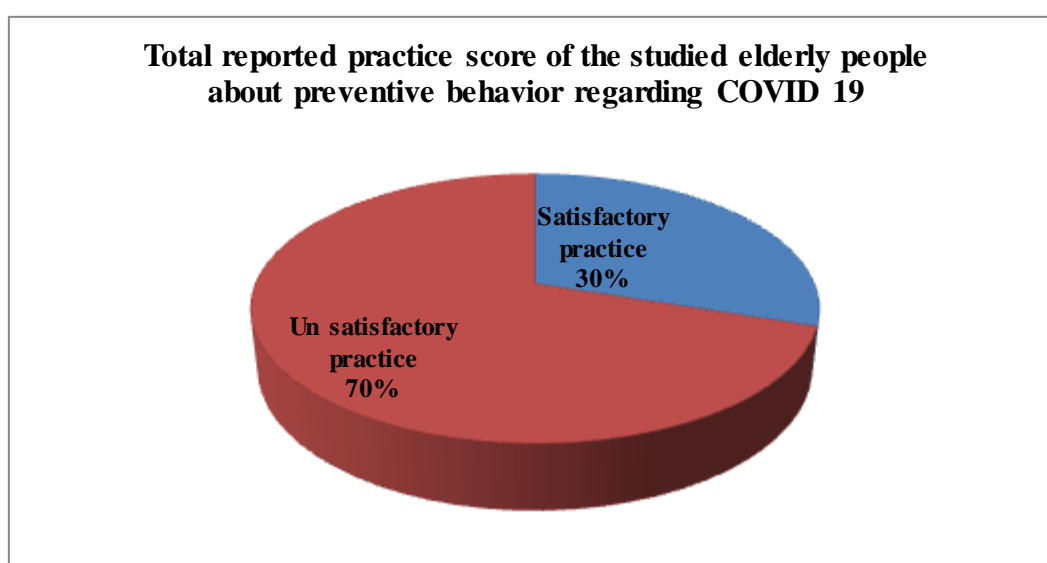


Figure (I): Distribution of the studied elderly people regarding to their total reported practice score about preventive measures for COVID 19

Discussion

COVID-19 is a new disease and highly contagious infection that has a worsening and serious side effect among all age group. But the seriousness of COVID-19 increases with age, especially among elderly. COVID-19 increases the risk of elderly for hospitalization and dying, as the elderly has multiple chronic condition and low immunity^(17, 18). So, the aim of this study was to determine the compliance of rural elderly people with preventive behaviors regarding COVID-19.

Regarding socio – demographic characteristics of the studied elderly people, the results of the present study revealed that more than two thirds of the studied elderly people their age was 60 < 70 years and they were married and the mean age of studied elderly people were 66.63 years. Also half of them were male **table (1)**. This result is in contrast with **Yeon-Hwan et al. (2018)** who conducted a study to examine compliance with respiratory infection preventive behaviors and its related factors in older adults using a senior center and found that less than half of the participants were 65~74 age group, and the mean age of the participants were 76.11 years. The majority of participants were women and more than one quarter of them were married⁽¹⁹⁾.

Concerning medical history of the studied elderly the present study revealed that,

about one third of the studied elderly suffer from hypertension, about one quarter suffer from diabetes mellitus and only 6% suffer from liver disease (**table 2**). This is in agreement with **Guo et al. (2020)** who conducted a study to assess clinical characteristics of elderly Patients with COVID-19 in Hunan Province, China: a multicenter, retrospective study and found that nearly half of the studied elderly patients suffer from hypertension, one quarter of them suffer from diabetes mellitus and only 4.8% suffer from chronic liver disease⁽²⁰⁾.

Regarding vaccination with influenza or pneumococcal vaccine, the majority of the studied elderly were not vaccinated (**table2**) this may be due to lack of awareness of rural elderly about available vaccination and also about two thirds of them were illiterate or read and write (table 1). This is in the opposite of **Cho et al. (2015)** who conducted a study to assess Association between Living Arrangements and Influenza Vaccination Rates among Elderly South Korean People: The Fifth Korea National Health and Nutrition Examination Survey (KNHANES V-2) and revealed that the majority of the studied elderly people received seasonal influenza vaccine⁽²¹⁾. Also **Yeon-Hwan et al. (2018)** reported that 83% of the studied elderly people were taken influenza vaccine⁽¹⁹⁾.

Concerning history of smoking about three quarter of the studied elderly people weren't smokers (**table 2**), this may be as with advancing age the person become more recognizable about side effect of smoking on health. This is in the line with **Yeon-Hwan et al. (2018)** who reported that 88% of the studied elderly people were never smokers⁽¹⁹⁾.

In relation to history of elderly people about respiratory infection most of them reported that they had influenza and asthma in the previous year while the minority of them had pneumonia and chronic obstructive pulmonary disease (**table 3**). This may be due to lack of awareness of elderly people about preventive behavior of respiratory infection and respiratory hygiene and may be also due to about two thirds of them were illiterate or read and write (table 1). This is in the opposite with **Yeon-Hwan et al. (2018)** in relation to history of influenza and asthma while they were in agreement of our study regarding history of pneumonia and chronic obstructive pulmonary disease⁽¹⁹⁾.

Regarding levels of knowledge of the studied elderly people about COVID 19. It was observed that, only one quarter of the studied elderly had good knowledge regarding COVID 19, while more than two fifth of them had a fair knowledge score and about one third had a poor knowledge

score (**table 4**). This may be due to lack of awareness of the rural elderly people about COVID 19 and its seriousness as about two thirds of them were illiterate or read and write as well as it's a novel disease (table 1). This is in agreement with **Akalu et al. (2020)** who conducted a study to assess knowledge, attitude and practice towards COVID-19 among chronic disease patients at Addis Zemen Hospital, Northwest Ethiopia and revealed that the prevalence of poor knowledge was 33.9%, 37.4% of study participants had good knowledge while the remaining 28.7% had moderate knowledge⁽²²⁾.

Also our results regarding levels of knowledge of the studied elderly people (**table 4**) are in contrast with **Agarwal et al. (2020)** who conducted a study to assess knowledge, attitudes, and practices (KAP) about COVID-19 among Indian population: A cross-sectional study and reported that the majority of the participants were knowledgeable about COVID-19, especially the participants above 60 years of age⁽²³⁾.

Concerning reported practices of elderly people regarding preventive behaviors to COVID 19. It was observed that about one quarter of the studied elderly people always washing their hands with soap and water for 20 seconds (**table 5**). This may be due to lack of awareness of the studied elderly people about importance of

washing hands for 20 seconds in removing most of microorganisms on hands. This result is in contrast with **Akalu et al. (2020)** who reported that about 65.5% of the studied people were washing their hands frequently with soap and water for at least 20 seconds⁽²²⁾.

In addition, our results revealed that more than two thirds of the studied elderly people were discarding tissue papers in basket after coughing and sneezing (**table 5**). This is in the same line of **Akalu et al. (2020)** who reported that about 73.1% of the studied people were cover mouth and nose with tissue paper then discard it in trash⁽²²⁾.

In relation to, total practice score of the studied elderly people about preventive measures for COVID 19, it was observed that, most of the studied elderly had unsatisfactory practice score, while one third of them had satisfactory practice score (**figure 1**). This may be due to lack of awareness of the studied elderly people about COVID 19 and only one quarter of the studied elderly people had a good knowledge score regarding COVID 19 as in (**table 4**). This is in the same line with **Akalu et al. (2020)** who reported that the prevalence of poor practice regarding COVID 19 among chronic disease patients was 47.3% and only 25.9% of study participants had a good practice⁽²²⁾.

Regarding correlation between total knowledge score, total practice score and socio-demographic data of elderly people, it was found that, there was significant positive correlation between total knowledge score, job before retirement, level of education and total practice score of the studied elderly (**Table 6**). As it is normally when the level of knowledge, level of education and type of job improve, the result will be improve the level of practice as well. This is in the same line with **Akalu et al. (2020)** who reported that age, marital status, residence, occupation, monthly income, and poor knowledge were crudely associated with poor practice of COVID-19 prevention⁽²²⁾.

Conclusion and recommendation

Based on our study findings, we can conclude that, compliance of most elderly with preventive behaviors regarding COVID 19 at rural areas was unsatisfactory and need improvement. So, we can recommend that: health education programs about preventive behaviors of COVID-19 should be conducted for elderly in rural areas. Community health nurse should advocate for access of the rural elderly to hygienic and protective equipment. The government should promote availability of hygienic and protective equipment as alcohol, chlorine, mask and gloves with low prices.

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