

Factors Associated with Personal Protective Measures Utilization among Community Dwelling Older Adults during COVID-19 Pandemic in Alexandria , Egypt

Sarah Hafez¹ , Nadia Abdelnasser²
Eman Mahmoud Mohammed Shoukr¹

¹Department of Gerontological Nursing- Faculty of Nursing- Alexandria University, Alexandria, Egypt

²Department of Gerontological Nursing, South Valley University, Egypt.

EMAIL : sara-hafez@alexu.edu.eg , TEL : 01091307403

Abstract :

Introduction: The world's population is aging. Elderly faces various physiological and pathological changes make them at higher risk to be infected with COVID-19 and to suffer more from its complications. Therefore, this study aimed to identify the factors associated with personal protective measures utilization among community dwelling older adults during COVID-19 Pandemic in Alexandria, Egypt. **Setting:** The study was conducted at El-Wafaa club in Mohram Bec, which is affiliated to the Ministry of Social Solidarity in Alexandria, Egypt. **Subjects:** 190 eligible older adult participants, have neither cognitive impairment nor depression, able to read and write and have access to the internet. **Tools:** three tools were applied for data collection. **Results:** This study revealed that more than one third of the studied elderly had fair practice level toward COVID prevention (36.8 %), all the studied elderly had unsatisfactory level regarding social distancing, more than one half (56.8 %) of the studied elderly had negative attitude toward Covid-19, and more one half (55.8%) of the study subjects had good knowledge level. **Conclusion:** This study concluded that, the study elders have personal, psychological, and environmental factors that hinder their utilization of the protective measures against COVID-19, and the level of practices is affected significantly by sex, different educational level, and living alone or with others, (P = 0.010, 0.045, 0.005 respectively). **Recommendations:** The current study recommended designing of interventions targeted at improving older adults' practices , knowledge and attitudes regarding coronavirus and the usage of its preventive measures .

Key words: COVID-19 - personal protective measures- Older adults – Egypt

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Introduction

Aging is a universal event, that is happening more rapidly in the less developed countries. [1]. Older adults are vulnerable and live at risk because of the age-related changes that accompany advancing age. The immune system of older adults experiences diverse age-related changes which make older adults at a higher risk of multiple infectious respiratory diseases and their ability to fight infections declines with age. Therefore, higher rates of various respiratory infections are reported among older populations, specifically infections that are pandemic [2]. Severe acute respiratory syndrome coronavirus 2 (SARS-

CoV-2), a novel virus that causes COVID-19 infection, has newly emerged, and caused a fatal pandemic. The World Health Organization (WHO) declared SARS-CoV-2 as a pandemic in March 2020 [3]. According to the Centre for Disease Control and prevention (CDC) older adults are more predisposed to COVID-19 and its serious complications, especially those with age-related comorbid conditions such as cardiopulmonary disease, diabetes, and dementia, and accompanying polypharmacy [4,5]

COVID-19 is a communicable viral infection causes respiratory disorders. Symptoms in humans range from asymptomatic presentation to severe life-threatening complications, including pneumonia, respiratory failure, septic shock, and multi-organ dysfunction. It can be spread by close unprotected contact with the respiratory secretions and fomites of an infected one. The COVID-19 incubation period is ranged from one day to two weeks. This long incubation period causes a high risk of infection from asymptomatic persons. After exposure to the corona virus, the commonest features include, fever, and shortness of breath. Other symptoms, such as malaise and respiratory distress, have also been described. However, older adults can present by non-specific features, which do not appear in the symptoms presented in published reports especially those who are frail [6]. For instance, cough and shortness of breath may present as a reduction in function, such as diminished mobility, falls, or confusion with an exacerbation of heart failure or COPD rather than a distinct new complaint. Atypical presentations may lead to worse outcomes, missed diagnoses, and missed opportunities for treatment among older adult patients [7,8].

COVID-19 outbreak which originated in Wuhan, China, in December 2019 then spread to 25 countries around the world has aggravated terrors worldwide. In Egypt, 2844 cases have been reported including 205 deaths until April 18, 2020. The number of patients is increasing daily [3,9]. Confronting of the fast spreading of COVID-19 and the increasing number of infected people, prevention and infection control measures are urgently needed. It is imperative that personal protective measures are implemented by the public especially older adults as a mean to diminish the epidemic of respiratory viruses such as corona virus, especially, there is no available well-matched vaccine [10,11]. The World Health Organization (WHO) recommends the following main personal protective measures (PPM) against COVID-19; frequent hand hygiene by rubbing hands with alcohol if available and the hands are invisibly dirty, or by hand washing with soap and water if hands are dirty, avoiding touching the mouth, nose, and eyes. As well as respiratory etiquette by coughing or sneezing into a bent elbow or tissue then dispose it immediately, and self-isolation if not being well [9, 12, 13].

Additionally, keeping social distance (a minimum of 1 meter) as well as wearing a medical mask if having respiratory symptoms and performing hand hygiene after disposing of the mask. Moreover, regular cleaning and disinfection of the environment touched the surfaces. The WHO also, recommended that people aged 65 years and above should follow their healthcare provider's advice and stay updated. Older adult's attitudes and beliefs influence

their reactions to various health threats. Furthermore, there are sets of personal characteristics that may hinder or facilitate the utilization of PPM such as sex, age, level of education, and living conditions. As well, the environmental and social context in which older adult functions. The gerontological nurse has a great role in educating, motivating, and empowering the older adults to perform the preventive measures and master skills of doing them effectively, as well as equipping the older adults with the risks of not following such measures and to effectively consider the factors that may hinder or facilitate the older adult's usage of PPM [3,11, 14].

Significance of the study

In Egypt, the older adult's population is expanding, and this is expected to result in multi-morbidity in this age group [15]. A significant percentage of older Egyptian adults suffer from co-morbidities, putting them at a higher risk of COVID-19. Phenomena attracting the attention of the authors by unsystematic observation, that despite of the daily announcement via mass and social media about the importance of following the protective measures, a large segment of the Egyptian in general and older adults in specific still do not follow those precautions. To our knowledge there are no studies addressing the associated factors of using personal protective measures among older adults who are the most vulnerable group to this disease in Egypt. So, this study elucidates the various factors associated with the utilization of such measures among community dwelling older adults during COVID-19 outbreak in Alexandria, Egypt.

Aim of the Study: The study aimed to identify the Factors Associated with Personal Protective Measures Utilization among Community Dwelling Older Adults during COVID-19 Pandemic in Alexandria, Egypt

Research Question: What are the Factors Associated with Personal Protective Measures Utilization among Community Dwelling Older Adults during COVID-19 Pandemic in Alexandria, Egypt?

MATERIALS AND METHOD

Materials

Design: -

The study followed a descriptive correlational research design

Setting and subjects:

Based on the specifications concerning the restrictions during COVID19 outbreak in the country that include complete closure of all clubs during the period of the restrictions and for the safety of older adults who are the most vulnerable group to be infected with COVID19, the researchers chose the online platform for data collection. The study subjects were recruited from El-Waffa club of older adult persons at Alexandria. This club is affiliated to the Ministry of Social Solidarity, Egypt. The total number of the older

adults who are registered at the club is 400, which is considered the highest number of registered older adults at a club affiliated to the Ministry of Social Solidarity in comparison with other clubs. In addition to that, the registered older adults are from different places in Alexandria.

Sample size calculation and sampling technique: The Epi info program V7 was used to estimate the required sample size using the following parameters: population size 295. This study included a simple random sample of the older adults who aged 60 years and above, have no cognitive impairment, have no depression, able to read and write, willing to participate in the study, and have access to the internet via any method as smart phones, laptops, tablets. In order to have a 95% confidence level with a plus or minus 5% margin of error in the results, the study needed to survey at least 167 individuals (i.e., using the formula for the margin of error). The sample size was increased to 190 during the data collection to consider 10 % non-responses.

Tools of the study:

Three tools were used to collect the necessary data from the study subjects as follows:

Tool I: Short Portable Mental Status Questionnaire (SPMSQ)

The short portable mental status questionnaire was developed by Pfeiffer (1975) [16]. It is commonly used to identify the presence of mental impairment and to determine its degree. It consists of 10 questions that investigate the memory, orientation to time, place, attention, calculation, naming, repetition, registration, and language of the older adults. Where the correct answer given (1) and an incorrect (0). This questionnaire was interpreted into Arabic language and tested for its validity and reliability by Mahrous , in Egypt , and proved to be valid and reliable in older adults ($r= 0.89$) [17]. Sensitivity and specificity were .74 and .79 for the telephone test done by Roccaforte on older adults [18]. The Arabic version of this questionnaire was used in the present study.

Scoring is based on a 10 total points:

- a) A score from 0-2 indicates that the respondent has no cognitive impairment;
- b) A score from 3-4 indicates mild cognitive impairment;
- c) A score from 5-7 indicates moderate cognitive impairment; and
- d) A score from 8-10 indicates severe cognitive impairment

Tool (II): Patient Health Questionnaire-2 (PHQ-2):

The PHQ-2 inquires was developed by Chunyu , et al., 2007 about the frequency of depressed mood and anhedonia over the past two weeks included in 2 questions using 4 point Likert scale from (0) Not at all to nearly every day (3). The purpose of the PHQ-2 is to screen for depression in a “first-step” approach, the PHQ-2 is a valid screening tool for depression in older people. Patients who screen positive need further evaluation. A PHQ-2 score ranges

from 0-6. A score of 3 as the optimal cut point when using the PHQ-2 to screen for depression . If the score is 3 or greater, major depressive disorder is likely .The PHQ-2's criterion validity for major depression was good (sensitivity=100%, specificity=77%, AUC=0.88). Its sensitivity was 100% for each subgroup , Specificity increased with age.. The Arabic version was used in the study^[19].

Tool (III): Factors associated with personal protective measures utilization among older adults during COVID19 structured questionnaire.

This tool is a self-administered structured questionnaire that was developed by the researchers based on relevant literature and guided by standard precautions for infection provided by CDC, also PPM recommended by the WHO ; a guide to use of PPM in health care facilities and in the community provided by supreme council of Egyptian university hospitals 2020^[20-21]. This tool is designed to assess the different physical, psychological, and environmental factors that are associated with older adult's utilizations of personal protective measures during COVID19 outbreak as follows:

Table (1) :The different factors that are associated with older adult's utilizations of personal protective measures during COVID19 outbreak.

Personal factors	Psychological factors	Factors related to the protective measure itself	Environmental factors
1. Socio-demographic characteristics 2. Clinical data 3. Age related changes that may affect utilization as forgetfulness – problems in vision , hearing , mobility , and fine motor skills 4. Knowledge about COVID19 5. Knowledge about utilization of PPM	1. Embarrassment of wearing 2. Embarrassment of not shaking hands 3. Peer pressure	1. Uncomfortable to use 2. Workload of using such measures which is the degree to which the amount of work needed to be performed is feasible within a specific period,	4. Unavailability of the different measures 5. Cost of the measures 6. Farness of the places which selling such measures

This tool consisted of five sections as follows:

Section 1: This section is consisted of 15 questions divided as follows

- **Part A.** Socio-demographic data of the older adults such as, age, sex, marital status, educational level, occupation prior to retirement, current work, the place of residence, and living arrangement.
- **Part B.** Clinical data of the older adults include the presence of any medical problems.

- **Part C.** Physical changes that accompany ageing in relation to hearing, vision, problems with fine motor skills, and problems with mobility. Options “yes” and, “no” used for the purpose of evaluation for part B and C.

Section 2: This section includes 10 questions to assess older adults’ general knowledge regarding COVID19 as incubation period, mode of transmission, susceptibility of older adults to be infected with COVID19. It was assessed by 7 factual statements, “yes”, “no” and “don’t know” options were used for the purpose of evaluation this section. In addition to that , this section assesses knowledge related to wearing , removing face masks and performing hand hygiene correctly by inserting pictures into the questionnaire and the study subjects is requested to choose the right picture which illustrate the steps of hand washing and removing a facial mask.

The total score extended from 0-10. Every accurate response was yielded the score of one and the wrong or I do not know responses were yielded the score of zero. The higher scores indicated the higher level of knowledge. Total score is 20(10) (100%) which indicates that all items are answered correctly, score % = (the observed score / the maximum score) x 100. Then, score % was transferred into three classes as follows :

- Poor : Score : 0-3
- Fair : Score : 4-6
- Good: Score :7-10

Section 3: Consists of 28 questions to assess the older adult practices related to the precautionary measures that they are using during the pandemic to prevent infection, for example questions related to performing of respiratory etiquette covered in 5 questions , using of hand alcohol rub , hand washing included in 5 questions , cleaning up the surfaces with diluted chlorine, and measures to booster the immunity of the older adults as drinking 2 to 2.5 liters of fluids throughout the day, eating healthy food, eating more vegetables and fruits , having enough sleep hours from 5 to 7 hours per day. One point for each precautionary measure taken within each component. Thus, the total precaution score for each component categorized as:

- Satisfactory : $\geq 50\%$
- Unsatisfactory: $< 50\%$

The total precaution score ranged from 0 to 28 points. Lower scores indicate poor self-care practices in relation to COVID-19. The total score was classified into three sets as:

- Poor : Score : 0-9
- Fair : Score 10-19
- Good: Score : 20-28

Section 4: Includes 13 questions that assess the presence and frequency of barriers that may hinder the utilization of such practices as forgetting to perform those practices, consuming much time to perform, not having enough information about doing it correctly. The older adults choose type of practice and type of factors associated with the utilization of the protective measures. Each question scored through yes or no responses. Yes indicates the presence of barriers and takes a score of one (1). No, indicates absence of barriers and takes a score of zero (0)

Section 5: This section assessed the study subjects' beliefs and attitudes toward COVID19. To disclose the participants' beliefs, eight items were provided using a three-item Likert-type scale (agree, disagree, uncertain). It includes items related to the ability of PPM to protect against COVID19, the susceptibility of older adults to get the infection and to suffer from COVID19 complications. The total scores ranged from (0-16). The lower scores showed negative attitude toward COVID-19. Overall attitude scores were classified into three classes as:

- Neutral : (0-5)
- Negative :(6-11)
- Positive : (12-16)

The Arabic version of this tool was used in the study.

Method

I-Preparation phase:

1. Survey of all statistical records of older adults clubs that affiliated to the Ministry of Social Solidarity in Alexandria; Egypt, was carried out by the researchers via telephone , in order to identify those clubs with high rate of registered older adults; these were included in the study. This also helped to estimate the average number of subjects to be included in the study.
2. An Official letter was issued from the Faculty of Nursing, Alexandria University and forwarded to by e-mail to the director of the selected older adults club to obtain her approval to carry out the study, after being informed about the purpose of the study, the date and time of data collection.
3. A list of the names and phone numbers of all the older adults registered at the club, obtained from the club's administrator after getting their approval.
4. Tool II was translated into Arabic by the researchers and proved to be valid and reliable in older adults ($r= 0.965$). Tool III was developed by the researchers after a thorough review of relevant literature then the tools were tested for content validity by five experts in the related fields of the study namely Gerontological Nursing, Medical Surgical Nursing and Community Health Nursing, and the required modifications were carried out accordingly. Tool III was measured for internal reliability using Cronbach's alpha correlation coefficient. The results exhibited good internal consistency and stability, reliability ($r=, 0.892$). The researchers tested Tool III to determine if it renders correctly in various browsers.
5. Tool I and tool II are used to recruit the subjects form the target population, and it is applied by telephone interviewing. Researchers formulate tool -III using the Google form, the basic security of Google Forms is on par with the accepted standards of cloud-based document and questionnaire sharing. Another advantage of using Google form is that tracking advance information like IP address, geolocation, browser details is not available, which enable the researcher to maintain the confidentiality of the study subject's data.

6. Then the researchers sent the link to the study subjects via mail or at the whats application. No incomplete questionnaire, because the study participants has not the ability to submit the questionnaire without filling all the questions
7. Google Forms responses are stored in a worksheet that can only be accessed through a Google account login.
8. A pilot study was carried out on 20 older adults and were not included in the study to assess the applicability, clarity, and feasibility of the study tools. Necessary modifications were done accordingly.
9. Informed consent was sent to all the study subjected who fulfilled the criteria and included in the study, those who can print the consent, printed it and sign their names and either resent it by scanning the consent or by taking a photo of the consent , in case of no printer is available . The study subjects resent the consent to the Whats application or by emailing it to the researchers. The study subjects who do not master the skill to print, scan or taking a photo of the consent, have the choice to read the consent and recording their approval and to send it at Whats App or at messenger.
10. The respondents were informed that participation was voluntary and that they can refuse participation without any consequences in their part. Confidentiality of the respondents was assured by instructing them not to write their names or anything that would identify them in any part of the questionnaire.
11. Data collection took place from 1 April to 20 April 2020. At the period of data collection, there were sporadic cases of COVID-19 in Egypt.

Ethical considerations: -

An informed written and verbal consent was obtained from each study subject included in this study after explanation of the study purpose .Study subjects' privacy and anonymity were maintained along with confidentiality of the collected data. The researchers informed the study subjects that they have the right to withdraw from the study at any time.

Statistical Analysis: The collected data were coded and analyzed using PC with the Statistical Package for Social Sciences (SPSS version 25) and tabulated frequency and percentages were calculated. Descriptive statistics as frequency, percent, mean and standard deviation were used to describe different characteristics. The Chi-square test is used to determine whether there are any statistically significant differences between two or more groups (X^2 Test). The level of significance selected for this study was $p \leq 0.05$.

Results

Table (2) shows that more than a half of the study subjects were females (54.7%), the mean age of the subjects was 64.92 ± 5.073 , and the larger segment aged from 60 to less than 65 years (53.7 %). Nearly one third of them able to read and write, and the most (68.4%) were married. More than one third were employee. Nearly two thirds reported to have sufficient monthly income and lived with husband/ housewife. 77.4 % of studied subjects report to have chronic diseases. For the physiological age-related changes, more

than two thirds of them reported having either mobility problems or problems with fine motor skills, (78.9%, 75.8% respectively).

Table (2): Distribution of the studied older adults according to their socio-demographic characteristics and clinical data

Socio-demographic data		Frequency (n=190)	Percent %
Sex	▪ Female	104	54.7
	▪ Male	86	45.3
Age	▪ 60-	102	53.7
	▪ 65-	51	26.8
	▪ 70-	26	13.7
	▪ 75-	7	3.7
	▪ 80-85	4	2.1
	Mean ± SD		64.92 ± 5.073
Marital status	▪ Married	130	68.4
	▪ Widow	51	26.8
	▪ Separated	8	4.2
	▪ Single	1	0.5
Level of education	▪ Read and write	62	32.6
	▪ Primary school	23	12.1
	▪ Secondary school	38	20.0
	▪ University education	59	31.1
	▪ Postgraduate education	8	4.2
Monthly income	▪ Enough	124	65.3
	▪ Not enough	66	34.7
Living arrangement	▪ Husband / Wife	125	65.8
	▪ With son/ daughter	51	26.8
	▪ Alone	8	4.2
	▪ with relatives	6	3.2
Physiological age -related changes			
❖ Hearing	▪ No hearing problems	135	71.1
	▪ Having hearing problems	55	29
❖ Vision	▪ No Vision problems	115	60.5
	▪ Having Vision problems	75	39.5
Presence of chronic diseases			
	▪ yes	147	77.4
	▪ No	43	22.6
Problems with fine motor skill			
	▪ yes	40	21.1
	▪ No	150	78.9
Problems with mobility			
	▪ yes	46	24.2
	▪ No	144	75.8

Table (3) depicts that more than one half (55.8%) of the study subjects had good knowledge level, while only 5.3 % of them had poor level.

Table (3): Distribution of the studied older adults according to their knowledge level about COVID-19.

Total knowledge	Frequency	Percent
▪ Poor	10	5.3
▪ Fair	74	38.9
▪ Good	106	55.8
Total	190	100.0

Table (4) reflects that more than one half (56.8 %) of the studied older adults had negative attitude toward Covid-19 and the utilization of the protective measures while only 39.5 % of them had positive attitude.

Table (4): Distribution of the studied older adults according to their beliefs and attitude level toward COVID-19 and use of protective measures.

Total attitudes	Frequency (n=190)	Percent %
▪ Negative	108	56.8
▪ Neutral	7	3.7
▪ Positive	75	39.5

Table (5) illustrates the distribution of the studied older adults according to their type of practices against COVID-19. Regarding respiratory etiquette, more than two thirds (68.9 %) of the studied older adults had satisfactory level of respiratory etiquette. Nearly two thirds (64.2 %) had satisfactory level of hand hygiene. Concerning social distance, all (100.0 %) the studied older adults had unsatisfactory level, while the majority (88.9 %) of the studied older adults had unsatisfactory level of personal and environmental care.

Table (5): Distribution of the studied older adults according to the type of practices against COVID-19:

Practice items	Frequency	Percent %
Respiratory etiquette		
▪ Unsatisfactory	59	31.1
▪ Satisfactory	131	68.9
Hand hygiene		
▪ Unsatisfactory	68	35.8
▪ Satisfactory	122	64.2
Social distance		
▪ Unsatisfactory	190	100.0
Immunity		
▪ Unsatisfactory	98	51.6
▪ Satisfactory	92	48.4
Personal and environmental care		
▪ Unsatisfactory	169	88.9
▪ Satisfactory	21	11.1

Table (6) shows that more than one third of the studied older adults had fair practice level (36.8 %), while only 27.9% reported to have poor level of practices toward covid-19 prevention.

Table (6): Distribution of the studied older adults according to the practice level against COVID-19.

Total practices	Frequency	Percent%
▪ Poor	53	27.9
▪ Fair	70	36.8
▪ Good	67	35.3
Total	190	100.0

Table (7) shows that more than one half of the studied older adults did not have enough information about the importance of using PPM or the correct way of utilization, forgot to do it, and reported that it was not available (51.6%, 54.7%, 51.1% respectively).

Table (7): Distribution of the studied older adults according to their barriers of using personal protective measures against COVID-19.

Barriers #	Frequency (n= 190)			
	Yes		No	
	N	%	N	%
1. Not having enough information about its importance	98	51.6	92	48.4
2. Forgetting to do such measures	104	54.7	86	45.3
3. Uncomfortable to use	91	47.9	99	52.1
4. It consumes a lot of time to implement it	48	25.3	142	74.7
5. Its usage affects the daily routine greatly	64	33.7	126	66.3
6. Not available	97	51.1	93	48.9
7. Places that sell such measures are away from home	31	16.3	159	83.7
8. Not able to buy because they are expensive	54	28.4	136	71.6
9. Embarrassment of wearing it	51	26.8	139	73.2
10. Embarrassment of not shaking hands	66	34.7	124	65.3
11. Pressure from surrounding people not to follow these measures	23	12.1	167	87.9
12. Difficulty in wearing gloves	40	21.1	150	78.9
13. Difficulty in wearing face masks	55	28.9	135	71.1

More than one answer

Table (8) illustrates the relationship between the studied older adults' practice levels and their demographic characteristics and clinical data . The level of practices is affected significantly by sex, different educational level, and living alone or with others, ($P= 0.010$, 0.045 , 0.005 respectively). However, the study subjects ' level of practices does not affected by the other predetermined variables.

Table (8): The relationship between the studied older adults' practice levels and their demographic characteristics and clinical data:

Items	Levels of practice						Total N=190		Test of significance
	Poor (N=53)		Fair (N=70)		Good (N=67)		No	%	
	No	%	No	%	No	%			
Age									
▪ 60-	25	47.2	46	65.7	31	46.3	102	53.7	X ² =14.496 P=0.062
▪ 65-	14	26.4	18	25.7	19	28.4	51	26.8	
▪ 70-	12	22.6	4	5.7	10	14.9	26	13.7	
▪ 75-	2	3.8	1	1.4	4	6.0	7	3.7	
▪ 80-85	0	0.0	1	1.4	3	4.5	4	2.1	
Sex									
▪ Male	30	56.6	22	31.4	34	50.7	86	45.3	X ² = 8.972 P=0.010**
▪ Female	23	43.4	48	68.6	33	49.3	104	54.7	
Level of education									
▪ Read & write	22	41.5	21	30.0	19	28.4	62	32.6	X ² = 14.802 P=0.045*
▪ Basic education	8	15.1	6	8.6	9	13.4	23	12.1	
▪ Secondary/technical education	13	24.5	18	25.7	7	10.4	38	20.0	
▪ University education	9	17.0	22	31.4	28	41.8	59	31.1	
▪ Post university education	1	1.9	3	4.3	4	6.0	8	4.2	
Marital status									
▪ Single	1	1.9	0	0.0	0	0.0	1	0.5	X ² = 6.605 P=0.340
▪ Married	36	67.9	43	61.4	51	76.1	130	68.4	
▪ Widow	13	24.5	24	34.3	14	20.9	51	26.8	
▪ Separated	3	5.7	3	4.3	2	3.0	8	4.2	
Live with									
▪ Husband/wife	34	64.2	38	54.3	53	79.1	125	65.8	X ² = 17.787 P=0.005**
▪ Sone/daughter	11	20.8	28	40.0	12	17.9	51	26.8	
▪ Relatives	4	7.5	2	2.9	0	0.0	6	3.2	
▪ Alone	4	7.5	2	2.9	2	3.0	8	4.2	
Income sufficiency									
▪ Enough	31	58.5	45	64.3	48	71.6	124	65.3	X ² = 2.304 P=0.316
▪ Not enough	22	41.5	25	35.7	19	28.4	66	34.7	
Have chronic diseases									
▪ Yes	41	77.4	55	78.6	51	76.1	147	77.4	X ² = 0.118 P=0.943
▪ No	12	22.6	15	21.4	16	23.9	43	22.6	
Physiological changes									
❖ Hearing									
▪ No hearing problems	34	64.2	52	74.3	49	73.1	135	71	X ² = 3.862 P=0.425
▪ Having hearing problems	19	35.9	18	25.7	18	26.9	55	29	
❖ Vision									
▪ No vision problems	28	52.8	40	57.1	47	70.1	115	60.5	X ² = 5.479 P =0. 242
▪ Having vision problems	25	47.2	30	42.9	20	29.9	75	39.5	
❖ Problems with fine motor skills									
▪ Yes	13	24.5	12	17.1	15	22.4	40	21.1	X ² = 1.101 P =0. 577
▪ No	40	75.5	58	82.9	52	77.6	150	78.9	
❖ Problems with mobility									
▪ Yes	15	28.3	13	18.6	18	26.9	46	24.2	X ² = 1.954 P = 0.376
▪ No	38	71.7	57	81.4	49	73.1	144	75.8	

X² Chi Square Test * Statistically significant at ≤0.05 ** Highly statistically significant at ≤0.01

Discussion

COVID-19 represents a major threat to older adults. It has rapidly spread around the world, posing enormous challenges to communities. Existing literature indicates that age is an important predictor of poor outcomes among patients with COVID. Since there are no proven drugs and vaccines, PPM are necessary to slow down the spread of the outbreak. Consequently, this research focuses on identifying the knowledge, attitude, practice, and barriers of using PPM against COVID-19 among older adults at El-Waffa club of older adult persons at Alexandria, Egypt. Regarding the knowledge of the older adults which is considered one of the personal factors that can affect the older adults' usage of protective measures, the current study disclosed that more than one half of the study subjects had good knowledge level about Covid-19. This can be explained by that, the mass media as Television channels nearly 24 hours have broadcasted information about Covid-19 and its preventive measures. Definitely, older adults' knowledge regarding corona virus, its mode of transmission, available measures to protect against it, can affect their participation in the preventive measure. This current finding is supported by the findings of the study done in Lebanon by Domiati et al which showed that most of the participants had a good knowledge of COVID- 19 with a mean score of 13.51 ± 2.56 [22].

An attitude is defined by Fishbein and Ajzen, 1975 as a positive or negative response toward people, objects, or ideas that is learned and changed by different situations [23]. Beliefs and attitudes are related to lifestyle, subjects, with negative attitudes may have the less potentiality for lifestyle change [24]. Our study suggested that more than one half of the study subjects had negative attitude and false believes toward Covid-19 as they do not believe in the efficiency of the protective materials, in addition to that, the majority of the study subjects believed that Egyptians have a strong immunity that will protect them from COVID-19 and judiciary and destiny only can protect person from corona virus infection. This finding is contradicting with that of the study conducted by Dkhar, et al in India which showed that most of the respondents had positive attitude, during the pandemic because they considered that the initiatives taken by administrations were adequate and fully agreed with the lockdown decision to reduce the number of cases [25].

Moreover this study finding is in disagreement with Zhong's study which conducted in China who reported that, the vast majority of the participants also held an optimistic attitude towards the COVID-19 epidemic: and believed that COVID-19 will finally be successfully controlled, as well as they had confidence that China can win the battle against the virus [26]. In addition to Yue S. et al in China who reported that, all the respondents recognized the seriousness of the outbreak. Almost all (99.6%) of the residents believed that preventive measures, such as going outdoors less, washing hands frequently and wearing masks could prevent the infection of COVID-19 [27]. According to the current findings, more than one third of the study subjects had fair practice level. The respondents

had a satisfactory levels in doing respiratory etiquette as covering mouth and nose while sneezing and coughing, washing hands and using sanitizers, while all the studied older adults do not practice social distancing , this may be due to the effect of the Egyptian culture that involve gathering and intimacy and they rely on the use of other protective measures .Also, more than one half of the respondents do not follow measures to booster their immunity as eating citrus fruits, drinking enough fluids , getting enough sleep hours . These findings are in the same line with the findings of a study done by Reuben et al.,2020 in Nigeria who found that, following/respecting health recommendations, social distancing/avoiding crowd, avoiding handshakes and face kissing were some of the practices to reduce community spread COVID-19 as reported by 90.2% (531), 78.8% (464) and 74.4% (438) of the respondents [28]. Also, these findings are consistent with the findings that were reported by Ngwewondo, et al 2020 in Cameroon [29] .

Physiological age-related changes are considered another personal factor that may affect utilization as forgetfulness to do such measures which is one of the most reported barriers and may be explained by the effect of ageing on the recent memory. While , problems related to difficulty in wearing masks and gloves were reported by less than one third of the study participants and they may due to the effect of ageing on vision , mobility , and fine motor skills as more than one half of the study subjects reported to have problems in vision , mobility and fine motor skills .In addition to that , unavailability of face masks, alcohol also reported by more than one half of the study subjects and the uncomfortableness to wear masks and gloves also has been reported by the majority. Surprisingly, more than one half of the studied older adults did not have enough information about the importance of using personal protective, despite the continuous broadcasting about COVID. This may be explained by the fact that most of the information announced at the period of data collection was only about the mode of transmission and incubation of period of COVID-19 and did not include the ways of wearing and removing masks and utilizing sensitizers.

With regard to the psychological factors that can affect the utilization of PPM, The current study disclosed that more than one half of the study participants reported to have psychological factors as embarrassment of wearing the masks , gloves and embarrassment from not shaking hands , Additionally , among the psychological factors is peer pressure as they encourage the study older adults not to follow the PPM .This is may be explained by that some Egyptians rely only on the protection comes only from the god . Whereas factors related to the protective measure itself as uncomfortable to wear or to perform is reported by less than one half of the study subjects, this may be due to the period of data collection was earlier in the beginning of the COVID-19 prevalence. For the environmental factors as the unavailability of the different measures that was reported by more than half of the participants, which was a problem at the beginning of the pandemic because of the problems most of the countries faced in the export and the rush of the most to buy the alcohol, masks and gloves and stored them at home. In addition, the urgent need of the health care providers to utilize more of those measures. While other environmental

factors such as the cost, and fairness of selling places was reported by less than one third of the study participants.

Concerning the sociodemographic data as one of the personal factors that can affect utilization of the PPM, the current study findings revealed that, there is a gender differences in the level of practice of the studied older adults with a statistically significant relation was found between male and female study subjects since males exhibited lower level of practices than the females. This is an agreement with a study done by Ferdous et al.,2020 in Bangladesh, who revealed that females reported to have a higher level of practices than the males [30]. Additionally, the level of practice of the current study is affected by their level of education and the living arrangements, since those with higher level of education and who are living with their spouses reported to have good practices regarding COVID-19. This finding can be explained by the ability to read the TV, social media instructions about the importance of using PPM and a motivation from spouse. Therefore, gerontological nurses as one of health care professionals should be able to address those factors affecting the usage of PPM among older adults and to improve the older adult's knowledge, practices, and attitudes toward the prevention of COVID-19.

Conclusion

Based on the findings of the present study, it can be concluded that older adults face many factors that can affect their utilization of the preventive measures against COVID-19. Among these factors is the age -related changes that has a major effect on the study older adults' utilization of PPM such as forgetfulness, problems in vision, mobility, fine motor abilities that hinder their usage of such measures and make it consume a lot of time to perform. Additionally, this study revealed that most of the study older adults reported to have good level of knowledge, fair level of practice and negative attitude toward COVID-19 and the utilization of the protective measures. The level of practices is affected significantly by sex, different educational level, and living conditions of the study seniors.

Recommendations

- Educational strategies need to be developed to enhance older adults' skills in performing the different personal protective measures correctly.
- Educational programs need to be developed to provide the older adults with the necessary information to enhance their immunity.
- **For further research:** the study needs to be replicated to assess the presence of those factors among older adults in different communities and after the passage of time since the COVID-19 appears.

Conflict of interest

The authors report no conflict of interests in this work.

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