Relationship Between Knowledge, Preventive Practices and Fear from COVID-19 among Middle Aged and Older Adults: During the Novel Coronavirus Outbreak

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Abstract: *Background*: New virus infections outbreaks among people are always a public health problem. For the COVID-19, it may have physical, psychological, and social consequences that affect on individuals. One of these psychological consequences is fear. Older adults, especially with chronic health conditions are extremely vulnerable to COVID-19. So, individuals must have good COVID-19 knowledge and preventive practices to combat this fear and prevent the spread of infection *Aim*: Determine the relationship between knowledge, preventive practices, and fear from COVID-19 among middle aged and older adults: during the novel coronavirus outbreak. *Design*: A descriptive cross-sectional correlational research design was used in this study. *Setting*: The study was carried out at Temai Elamdid health insurance outpatient clinics that affiliated to the Egyptian Ministry of Health. *Subjects*: A convenience sample of 185 patients attending the previous study setting. Tools: Four tools were used in this study; demographic and clinical data structured interview schedule, COVID-19 knowledge structured interview schedule, COVID-19 preventive practices structured interview schedule and fear from COVID-19 scale *Results*: It was noticed that more than two fifth of middle aged adults and more than one third of older adults had satisfactory COVID-19 preventive practices, Furthermore, more than one third of middle aged adults and one third of older adults had good COVID-19 knowledge with statistically significant difference was found between two groups. Also, Significant relation was found between both COVID-19 knowledge and preventive practices and fear from COVID-19 among the study subjects (P=0.000). In the same direction, there was statistically significant difference between middle aged adults and older adults regarding COVID-19 knowledge and preventive practices and higher level of COVID-19 fear (P=0.000). *Conclusion*: Older adults had a significant lower score of COVID-19 knowledge and preventive practices and higher level of COVID-19 fear than middle aged adults as strong negative correlation between fear from COVID-19 and either COVID-19 knowledge & preventive practices was found. *Recommendations*: Educational programs should be developed and implemented by nurses in different care settings to increase their awareness about COVID-19.

Keywords: Knowledge, Preventive Practices, Fear, COVID-19, Middle Aged, Older Adults

1. Introduction

Coronaviruses are a large family of enveloped RNA viruses that mostly infect birds and mammals, with humans being particularly vulnerable to infection and transmission of the virus [51]. The previous outbreaks of coronaviruses such as Severe Acute Respiratory Syndrome-Coronavirus (SARS-CoV) and Middle East Respiratory Syndrome-Coronavirus (MERS-CoV) show similarities to the novel coronavirus [33]. The novel coronavirus disease 2019 (COVID-19) is an emerging respiratory disease that first reported in Wuhan, in the Hubei province of China in the late December 2019 when patients stated that they having viral pneumonia resulted from an unknown microbial pathogen. A new coronavirus

was subsequently identified as the pathogen and was named temporarily the 2019 new coronavirus [36, 37].

The new COVID-19 epidemic has spread to most countries in the world. The number of new COVID-19 patients increased dramatically due to the traveling of hundreds of millions of people. The severity of COVID-19 had been underestimated until the national health commission classified it as a B type infectious disease and took actions to fight against this disease on 20 January 2020 [34]. Additionally, the World Health Organization (WHO) declared the COVID-19 outbreak a public health emergency of international concern on 30 January 2020 [56]. Since 31 December 2019 and as of 26 June 2020, 9 581 803 cases of COVID-19 (following the applied case definitions and testing strategies in the affected countries) have been reported worldwide, including 489 182 deaths. In Egypt, 61 130 cases was reported till 26 June 2020 and a rapid tendency towards increase [57]. Although new COVID-19 seems to be very contagious and has quickly spread globally, most infected people will develop mild to moderate illness and recover without hospitalization. Fever and cough are suggesting the differences in viral tropism compared to, SARS-CoV, MERS-CoV, and influenza [9, 54, 14].

Clinical manifestations of the new COVID-19 included fever, cough, fatigue, muscle or body aches, difficulty breathing, sore throat, the new loss of taste or smell, and headache. Additionally, some patients manifested gastrointestinal symptoms, with diarrhea, nausea, and vomiting [17, 58]. Older adults due to frailty and week immunity and people who have severe underlying medical conditions like hypertension, chronic obstructive pulmonary disease, diabetes, and cardiovascular disease, seem to be at higher risk for developing more serious complications leading to death [22, 26]. Atypical presentations of COVID-19 in older adults may include delirium, abdominal pain, and low-grade fever [41].

Confirmation of cases of new COVID-19 is based on real time reverse transcription polymerase chain reaction (rRT-PCR). Respiratory material should be collected from the upper respiratory specimens (nasopharyngeal and oropharyngeal swab or wash in ambulatory patients) and/or from the lower respiratory specimens (sputum if produced and/or endotracheal aspirate or bronchoalveolar lavage in patients with more severe respiratory disease [59] Regarding older adults, multiple lobe involvement was more common than in middle-aged [46].

Nowadays, there is no specific drug therapy against new COVID-19 for suspected or confirmed cases. Therefore, current treatments chiefly concentrated on symptomatic and respiratory support according to the diagnosis and treatment of pneumonia resulted from the new COVID-19 [38]. Almost all patients accepted oxygen therapy, and extracorporeal membrane oxygenation (ECMO) to patients with refractory hypoxemia is recommended by the World Health Organization [60]. Rescue treatment with convalescent plasma and immunoglobulin G is delivered to some critical cases [18]. It was noticed that older patients with COVID-19 have been reported to exhibit relatively higher mortality and severity of illness than younger patients [52] as the mortality rate of COVID-19 is 15% for older people 80 years or over compared to 0.2% for those under 20 years worldwide. Therefore, Age is considered a critical major risk for COVID-19 mortality as aging itself has been strongly associated with worse outcomes due to the pathophysiological changes that characterize the respiratory system and has created serious psychological disturbances, insecurity, and fear among older adults [28].

To date, there is no clinically approved vaccination against the new COVID-19. Therefore, the best prevention is to avoid being exposed to the virus through infection control measures [35]. The knowledge of the public is expected to largely influence the degree of adherence to personal protective measures [47]. The emergence of the COVID-19 and its pandemic nature has exacerbated fears worldwide. One characteristic nature of infectious disease compared with other conditions is fear [2]. Fear is known as an unpleasant emotional state that is induced by the perception of frightening stimuli [50]. Extraordinary situations such as disease outbreaks can trigger fear among many individuals [6, 25]. Currently, there is not enough evidence that knowledge and preventive practices toward the COVID-19 influenced by fear from COVID-19 [62].

1.1. Aims of the Study

This study was aimed to determine the relationship between knowledge, preventive practices, and fear from COVID-19 among middle aged and older adults: during the novel coronavirus outbreak.

1.2. Research Questions

Q1: What is COVID-19 knowledge among middle aged and older adults: during the novel coronavirus outbreak?

Q2: What is COVID-19 preventive practices among middle aged and older adults: during the novel coronavirus outbreak?

Q3: What is the relationship between knowledge, preventive practices, and fear from COVID-19 among middle aged and older adults: during the novel coronavirus outbreak?

2. Subject and Method

2.1. Study Design

A descriptive cross-sectional correlational research design was used in this study.

2.2. Setting

The study was carried out at Temai Elamdid health insurance outpatient clinics that are affiliated to the Egyptian Ministry of Health.

Temai Elamdid health insurance outpatient clinics consisted of two floors. The ground consists of The

pharmacy, The pharmacy store, Analysis Lab, an archive room that contains patients files, and finally two outpatient clinics; one general internal medicine clinic and the other general practitioner clinic for orthopedic, dermatology, and ophthalmology. The first floor consisted of director office, employee room, statistics office, medical supplies store, Paper store, bathroom, and two outpatient clinics (dentist clinic and pediatric clinic). The outpatient clinics receive patients (nearly 20 patients per day in each outpatient clinic due to novel coronavirus outbreak), six days per week from Saturday to Thursday from 8 Am to 2 Pm.

2.3. Subjects

A convenience sample of 185 patients. The sample size was calculated based on the percentage of inadequate knowledge about novel coronavirus among selected rural community 19% [45] and percentage of poor knowledge among general population 22.6% [21]. for calculating sample size we used the website "www.Dssresearch.com" using the previous percentage, two-tailed significance test with a power 80% and alpha error 5%. The calculated sample size was 164. We add 10% for any error in data calculation, So we were conducted our study on 185 patients attending the previous study setting and fulfilling the following (Inclusion criteria):

1) Able to communicate.
2) Willing and give their consent for participation in the study.
3) Available at the time of data collection.
4) Both sex patients.
5) Aged from 20 years old and older, and then stratified into two groups according to their age; Adults group (aged from 20 to less than 60 years old), and older adults group (aged from 60 years and more).

2.4. Tools of Data Collection

So as to collect the necessary information for the study, four tools were used:

2.4.1. Tool I: Demographic and Medical History Structured Interview Schedule

This tool was developed by the researchers after literature review [8, 43, 65] and consists of; demographic data of the study participants as age, sex, income, marital status, residence, occupation and education; as well as, medical history of study participants.

2.4.2. Tool II: COVID-19 Knowledge Structured Interview Schedule

This tool was developed by the researchers after the literature review [64, 24, 61, 15] to assess baseline knowledge of study participants about COVID-19. It consisted of thirty-two (32) multiple-choice questions; regarding the nature of the disease (Q1-Q2), mode of transmission (Q3-Q15), the incubation period (Q16), manifestations (Q17-Q19), diagnosis (Q20), treatment (Q21-Q22), risk factors (Q23-Q24), complications (Q25),

preventive measures (Q26-Q32). Each question was responded as Yes, No and I don't know.

Scoring system for COVID-19 knowledge structured interview schedule:

The correct answer for each question gets a score of one grade, while incorrect answers and don't know get a score of zero. The total knowledge score was computed out of thirty-two (32) grades. It was converted into percent as the following [53]:

1) Good knowledge = $\geq$ 75%.
2) Average knowledge = 50 - 75%.
3) Poor knowledge = < 50%.

2.4.3. Tool III: COVID-19 Preventive Practices Structured Interview Schedule

This tool was developed by the researchers after the literature review [19, 3, 56] to assess COVID-19 preventive practices among study participants. It was consists of sixteen questions regarding; hand hygiene (Q1-Q2), avoid touching nose, mouth, and eye (Q3), wearing mask (Q4), disinfectant of surfaces (Q5), respiratory hygiene/cough etiquette (Q6-Q7), social distancing (Q8-Q15) and self-isolation (Q16).

Scoring system for COVID-19 Preventive Practices structured interview schedule:

Give two grades for the answer "yes", one grade for the answer "sometimes", while zero for the answer "No" [39]. The total COVID-19 preventive practices score was computed out of thirty-two (32) grades. It was converted into percent.

The total COVID-19 Preventive practices score [53]:
1) Satisfactory practices = $\geq$ 75%.
2) Unsatisfactory practices = < 75%.

2.4.4. Tool IV: Fear from COVID-19 Scale

This scale was designed by Ahorsu et al.,(2020) [2]. It is originally designed to assess one's fear of COVID-19. It was in the English version and translated into the Arabic language and validated by the researchers. It consisted of seven questions. The subjects indicate their agreement level with the statements by a five-item Likert type scale. Answers included "strongly disagree," "disagree," "neither agree nor disagree," "agree," and "strongly agree". The maximum score possible for each question is five, and minimum the is one. A total score is calculated by adding up the score of each item (from seven to thirty-five). The higher the score, the greater COVID-19 fear.

2.5. Method of Data Collection

2.5.1. Phase I: Preparatory Phase

1) An Official approval which includes the title and aim of the study was obtained from the Faculty of Nursing, Mansoura University. Additionally, official approval for conducting the study was obtained from the responsible administrative personnel of Temai Elamdid health insurance outpatient clinics to attain the approval for interviewing the patients.
2) After a thorough review of the literature, Tool I (Demographic and medical history structured interview

schedule), Tool II (COVID-19 knowledge structured interview schedule), Tool III (COVID-19 Preventive Practices structured interview schedule) were developed by the researchers.

3) Tool IV (Fear from COVID-19 scale) was translated by the researchers into the Arabic language and tested using the test-retest method.

4) The reliability of tool II &tool III and Tool IV was applied to 20 patients selected from the previous mentioned setting and reapplied two weeks later. The reliability was assured by Cronbach's alpha (r) r= 0.89 for tool II and r = 0.88 for tool III and r = 0.87 for tool IV.

5) The study tools were tested for its validity by seven experts in the fields of community health medicine and medical surgical nursing; as well as gerontological nursing, as a jury to test feasibility and validity, and the necessary changes were done consequently.

6) A pilot study was conducted on 20 patients (10% of sample size) in the previously mentioned setting before beginning the data collection to test the tools feasibility and to make the necessary changes. Patients who participated in the pilot study were excluded from the study sample.

2.5.2. Phase II: Operational Phase

1) Based on the schedule of the Temai Elamdid health insurance outpatient clinics, the researchers visited the outpatient clinics six days per week (from Saturday to Thursday) from 8 Am to 2 Pm.

2) All patients who attended these clinics in these days and fulfill the study criteria were included in the study.

3) The researchers started by introducing herself to patients and giving him/her a brief idea about the study purpose.

4) Each patient who agreed to participate in the study and fulfilling the inclusion criteria was interviewed individually to collect the necessary data using all the study tools. Time taken to fill the study tools ranged from 20 to 30 minutes for each patient.

5) If the study subjects can't read the study questionnaire, the researchers read each question to study subjects and marked exactly the answer they gave.

6) The researchers used to meet with each study subject in the waiting room in outpatient clinics or inside outpatient clinics. A face to face interview was directed with each patient who achieved the study criteria. Then the required data were collected using tools of the study.

7) The researchers follow preventive measures while dealing with patients as wearing mask, gloves, maintain social distance, and prevent being in a crowded area with patients by interview patient individually according to the rules of outpatient clinics.

8) The data collection covered a period from the end of April, 2020 till the end of May, 2020.

2.6. Ethical Consideration

1) Informed consent from the study subjects was obtained after clarification of the study and assured that data collection was used only for the purpose of the study.

2) The confidentiality of the collected data and the privacy of the participants were maintained.

3) Study participants were informed about their rights to draw from the study at any time without any punishment.

2.7. Statistical Analysis

After data were collected it was revised, coded, and fed to Statistical Package for the Social Sciences (SPSS) version 22. The given graphs were constructed using Microsoft excel software and SPSS. The normality of data was first tested with one-sample Kolmogorov- Smirnov test. Data were presented using descriptive statistics in the form of frequencies and percentages for qualitative variables, and means and standard deviations, median, and Min-Max for quantitative variables. Quantitative continuous data were compared using the non-parametric Mann-Whitney U-test to compare quantitative variables between two groups and Kruskal-Wallis test for more than two groups and as the normal distribution of the data could not be assumed. Pearson correlation coefficient (r) used for the correlation between continuous data. Statistical significance was considered at p-value <0.05.

3. Results

Table 1 shows the distribution of the studied subjects according to their demographic characteristics and their medical history, this study included 185 participants; half (50.8%) of those were middle aged and about half (49.2%) were older adults with a mean age 51.23±6.52 and 67.16±5.37 respectively. Most of the two groups (60.6% of middle aged and 61.5% of older adults) were male. Concerning the educational level the results revealed that diplome education was prevailing most of the two groups (48.9% in middle aged and 37.4% in older adults group). Also, about half of both middle aged group and the older adults group were residing in urban (52.1% & 50.5% respectively). Regarding marital status, It was observed that about three quarter of middle aged (84%) and about two third of older adults (68.1%) were married. In relation to the economic status, the majority of both middle aged and older adults groups (80.9% and 86.8% respectively) reported that their income was not enough. Regarding medical history, it was found that diabetes mellitus was the most prevailing disease among middle aged and older adults groups (67% & 68.1% respectively). With regard to demographic characteristics and medical history, there was no statistically significant difference between the two groups (p>0.05) except occupation (p=0.000).

Figure 1 illustrates the source of COVID-19 knowledge among middle aged and older adults, this figure shows that social media was considered the most common source of COVID-19 knowledge among both groups (60.6% in middle aged and 40.7% in older adults), while the lowest source of

knowledge among older adults was internet search (3.3%), and among middle aged was health care workers (8.8%).

Table 2 displays the distribution of studied subjects according to their knowledge & preventive practices and fear from COVID-19, It was noticed that there was a statistically significant difference was found between middle aged group and older adults group regarding to COVID-19 knowledge as about one third of middle aged (37.2%) and 33% of older adults had good COVID-19 knowledge (p=0.000). Also, it was observed that there was a statistically significant difference between middle aged and older adults groups. Concerning COVID-19 preventive practices, about two fifth (42.6%) of middle aged group in comparison to about one third of older adults had satisfactory COVID-19 preventive practices (p=0.000). Concerning fear from COVID-19, there was a statistically significant difference between middle aged and older adults groups as older adults had a higher level of fear than middle aged (p=0.000).

Table 3 shows the relation between demographic characteristics and both COVID-19 knowledge & preventive practices among the studied subjects. It appears from the table that males obtain higher mean scores of COVID-19 knowledge and preventive practices than females in both middle aged and older adults groups (P=0.000). Furthermore, the was a statistically significant relation between residence and both COVID-19 knowledge and preventive practices among the studied subjects as study subjects who were residing in urban areas had both higher scores of COVID-19 knowledge and preventive practices than others in both middle aged and older adults groups (p=0.000). Also, the table shows that there was a statistically significant relation between COVID-19 knowledge and income in both middle aged and older adults as the studied subjects with enough income had both higher scores of COVID-19 knowledge and preventive practices than those with not enough income (P=0.000). Moreover, the level of education affects significantly on COVID-19 knowledge in both groups as study subjects with university education had both higher scores of COVID-19 knowledge and preventive practices than others (P= 0.000).

Table 4 shows the relation between demographic characteristics and Fear from COVID-19 among the studied subjects. It appears from the table that sex affects significantly on the level of fear as females had a higher level of fear than males in both middle aged and older adults groups (P=0.000). Concerning residence, there was a statistically significant relation between the residence of the studied subjects and level of fear as study subjects who were living in rural areas had a higher level of COVID-19 fear than those who were living in urban areas (P=0.000). Also, the table shows that there was a statistically significant relation between income and level of fear as the studied subjects with enough income had a higher level of fear than those with not enough income (P=0.000). Otherwise, results revealed that education level affect significantly on the level of COVID-19 fear as study subjects with university education had a lower level of fear than others (P=0.000).

Table 5 shows the relation between COVID-19 knowledge & preventive practices and fear from COVID-19 among the studied subjects, It was noticed from the table that there was statistically significant results between both COVID-19 knowledge and preventive practices and fear from COVID-19 among the studied subjects as study subjects with good COVID-19 knowledge scores had a lower level of COVID-19 fear than those with poor scores of COVID-19 knowledge (P=0.000). Moreover, study subjects with unsatisfactory COVID-19 preventive practices had a higher level of fear than those with satisfactory preventive practices scores in both middle aged and older adults groups (P=0.000).

Table 6 shows the relation between COVID-19 Knowledge and preventive practices among the studied subjects; it appears from the table that there were statistically significant results was found between study subjects COVID-19 knowledge and their preventive practices as study subjects with satisfactory COVID-19 preventive practices had higher knowledge about COVID-19 than those with unsatisfactory COVID-19 preventive practices in both middle aged and older adults groups (P=0.000).

Figures 2&3 represent the correlation between total COVID-19 knowledge and preventive practices. These figures displayed that there was a statistically significant strong positive correlation between both total COVID-19 knowledge and preventive practices scores in middle aged and older adults groups.

Figures 4&5 show the correlation between total COVID-19 knowledge scores and fear from COVID-19 scores of the studied subjects. The figures clarified that there was a statistically significant strong negative correlation was found between total COVID-19 knowledge scores and fear from COVID-19 scores in middle aged and older adults groups.

Figures 6&7 represent the correlation between total COVID-19 preventive practices scores and fear from COVID-19 scores in both middle aged and older adults groups. These figures revealed that there was a statistically significant strong negative correlation between total COVID-19 preventive practices scores and fear from COVID-19 scores among the study subjects.

Table 1. Demographic characteristics and medical history of middle aged and older adults groups.

Items	Middle-aged group		Older adults group		Test of significance
	N	%	N	%	
	94	50.8	91	49.2	———
Age (years)	51.23+6.52		67.16+5.37		
Sex					
Male	57	60.6	56	61.5	Z=0.125
Female	37	39.4	35	38.5	P=0.900

Items	Middle-aged group		Older adults group		Test of significance
	N	%	N	%	
	94	50.8	91	49.2	—————
Residence					
Urban	49	52.1	46	50.5	Z=0.214
Rural	45	47.9	45	49.5	P=0.830
Occupation					
Employee	51	54.3	0	0	
Worker	12	12.8	0	0	
Housewife	19	20.2	23	25.3	X2=72.323
Farmer	4	4.3	5	5.5	P=0.000*
Retired	0	0	58	63.7	
Private work	8	8.5	5	5.5	
Marital Status					
Single	2	2.1	0	0	
Married	79	84.0	62	68.1	X2=13.597
Divorced	4	4.3	2	2.2	P=0.214
Widow	9	9.6	27	29.7	
Education					
Illiterate	11	11.7	25	27.5	
Read and write	11	11.7	10	11	
Primary education	16	17.0	16	17.6	X2=8.201
Diplome	46	48.9	34	37.4	P=0.084
University	10	10.6	6	6.6	
Income					
Enough	18	19.1	12	13.2	Z=1.097
Not enough	76	80.9	79	86.8	P=0.273
Medical History					
Hypertension					
Yes	29	30.9	36	39.6	Z=-1.237
No	65	69.1	55	60.4	P=0.216
Diabetes Mellitus					
Yes	63	67.0	62	68.1	Z=-0.161
No	31	33.0	29	31.9	P=0.872
Liver cirrhosis					
Yes	10	10.6	12	13.2	Z=-0.534
No	84	89.4	79	86.8	P=0.593
Ischemic Heart disease					
Yes	27	28.7	34	37.4	Z= -1.246
No	67	71.3	57	62.6	P=0.213

means more than one response; Z value of Mann-Whitney U test;
X2 value of Kruskal-Wallis test;
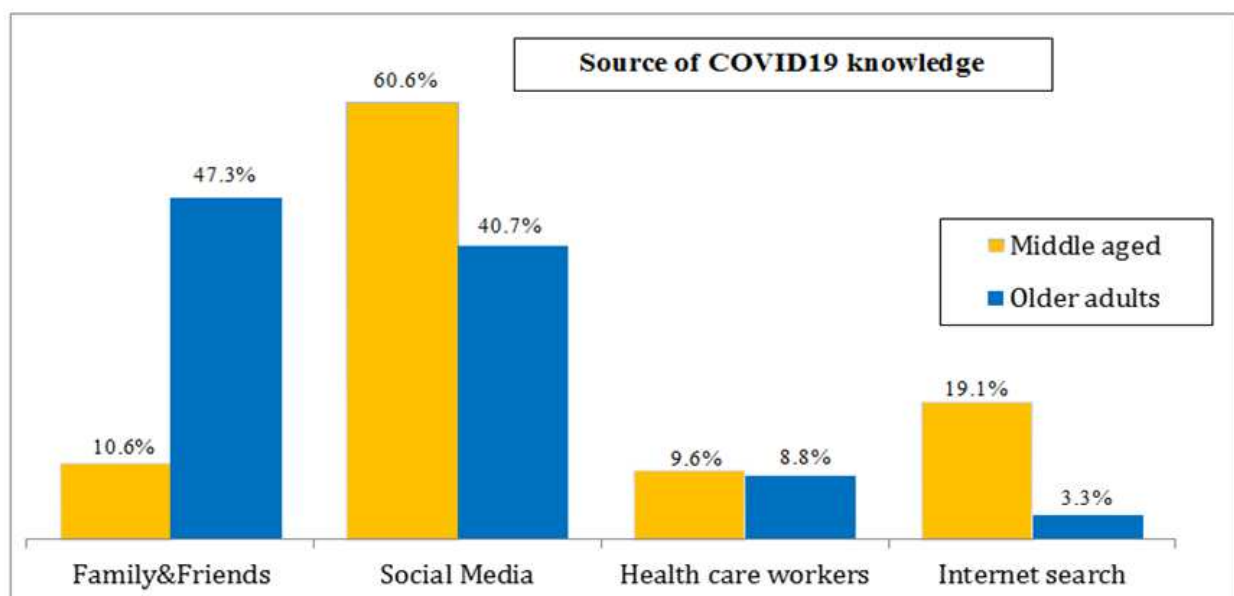*Significant at P ≤ 0.05

Figure 1. Source of COVID-19 knowledge among middle aged and older adults.

Table 2. *Distribution of studied subjects according to knowledge &preventive practices and fear from COVID-19.*

Items	Middle-aged group		Older adults group		Mann-Whitney U test	
	N (94)	%	N (91)	%	Z	p
COVID-19 Knowledge						
Good	35	37.2	30	33.0		
Average	17	18.1	11	12.1		
Poor	42	44.7	50	54.9	-4.123	(0.000) *
Mean ± SD	20.52 ±6.95		16.74±7.36			
Median (Min-Max)	23 (10 - 30)		14 (7 - 28)			
COVID-19 preventive practices						
Satisfactory	40	42.6	32	35.2		
Unsatisfactory	54	57.4	59	64.8	-4.677	(0.000) *
Mean ± SD	23.99±4.43		20.99±5.53			
Median (Min-Max)	23 (15 - 30)		21 (12 - 28)			
Fear from COVID-19						
Mean ± SD	12.33±5.22		20.74±6.59		-8.088	(0.000) *
Median (Min-Max)	10 (7-25)		23 (10-30)			

*Significant at p ≤ 0.05

Table 3. *Relation between demographic characteristics and both COVID-19 Knowledge & preventive practices among the studied subjects.*

Demographic characteristics	COVID-19 Knowledge				COVID-19 preventive practices			
	Middle-aged group (N=94)		Older adults group (N=91)		Middle-aged group (N=94)		Older adults group (N=91)	
	Mean ± SD	Median (Min-Max)	Mean ± SD	Median (Min-Max)	Mean ± SD	Median (Min-Max)	Mean ± SD	Median (Min-Max)
Sex								
Male	25.29±4.42	28 (14- 30)	20.84±6.19	25 (12-28)	26.75±2.65	28 (22- 30)	24.41±3.54	27 (18- 28)
Female	13.16±1.55	14 (10- 15)	10.17+3.04	10 (7-17)	19.73±3.01	20 (15-23)	15.51±3.27	15 (12- 22)
Test of significance	Z = -7.934	P=0.000*	Z =-7.201	P=0.000*	Z=-7.467	P=0.000*	Z=-7.196	P=0.000*
Residence								
Urban	26.73±2.47	28 (23- 30)	22.96+4.83	25 (14-28)	27.43±2.20	28 (23- 30)	25.59±2.69	27 (21-28)
Rural	13.76±2.37	14 (10- 22)	10.38+2.27	11 (7-14)	20.24±2.96	22 (15- 23)	16.29±3.24	17 (12- 22)
Test of significance	Z =-8.432	P=0.000*	Z =-8.181	P=0.000*	Z=-8.007	P=0.000*	Z=-7.970	P=0.000*
Marital Status								
Single	30.00±0.00	30 (30 -30)	_____	_____	29.50±0.71	29.5 (29 -30)	_____	_____
Married	24.50±7.00	28 (14 -28)	25.50±0.71	25.5 (25-26)	26.75±3.20	28 (22 - 29)	27.00±0.00	27 (27-27)
Divorced	20.49±6.90	23 (10 -30)	17.77±7.17	14 (7- 28)	21.33±3.70	22 (17 - 28)	18.29±5.49	17 (12-28)
Widow	16.89±5.73	14 (12 -27)	13.70±6.99	11 (7- 28)	24.01±4.43	23 (15 - 30)	21.97±5.19	22 (12-28)
Test of significance	X2=10.522	P=0.015	X2=8.568	P=0.014	X2 =9.542	P=0.023	X2 =9.155	P=0.010
Occupation								
Employee	23.59±6.19	27 (12 -30)	_____	_____	26.43±2.94	28 (19 -30)	_____	_____
Private work	22.00±8.40	28 (10 -28)	16.80±8.84	19 (7-25)	22.08±3.15	23 (17 - 29)	_____	_____
Farmer	13.16±1.83	14 (10-15)	9.35±2.74	9 (7-17)	18.68±2.93	18 (15- 23)	14.44±2.79	14 (12-22)
Worker	18.08±5.66	15 (12 -30)	_____	_____	22.75±0.50	23 (22-23)	20.60±3.29	20 (18-26)
Housewife	20.75±4.50	23 (14 -23)	15.00±5.61	13 (12-25)	24.50±5.88	28 (15- 29)	20.20±7.33	22 (12-27)
Retired	_____	_____	19.81±6.56	20 (11-28)	_____	_____	23.69±3.99	24 (17 -28)
Test of significance	X2=28.758	P= 0.000*	X2=42.501	P= 0.000*	X2 =41.511	P=0.000*	X2 =43.584	P=0.000*
Education								
Illiterate	12.36±3.53	11 (10-22)	9.20+2.68	9 (7- 17)	17.46±3.21	16 (15- 23)	14.28±2.73	14 (12-22)
Read and write	15.91±4.59	14 (12 -23)	12.00±2.49	11 (11-19)	19.27±2.79	18 (17- 23)	17.80±1.55	17 (17 -22)
Primary education	17.13±4.72	15 (14 -30)	17.00±5.79	13 (12-25)	22.50±2.09	23 (20- 29)	22.19±3.43	21 (18- 27)
Diplome	23.89±6.09	27.5 (13-28)	21.56±5.36	25 (14-7)	26.59±2.79	28 (22- 30)	25.06±2.86	27 (21-28)
University	24.50±5.93	27.5 (12-30)	28.00±0.00	28 (28- 28)	26.80±3.22	28 (19- 29)	28.00±0.00	28 (28- 28)
Test of significance	X2=39.568	P= 0.000*	X2=69.258	P= 0.000*	X2 =51.645	P=0.000*	X2 =68.247	P=0.000*
Income								
Enough	22.49±6.23	23.5 (10-14)	18.15+6.86	16 (9-28)	25.66±3.01	28 (20 -30)	22.29±4.72	22 (14 -28)
Not enough	12.22±1.56	12.5 (12-30)	7.42+0.51	7 (7-8)	16.94±1.59	17 (15- 20)	12.42±0.67	12 (12-14)
Test of significance	Z = -6.049	P=0.000*	Z = 5.577	P=0.000*	Z=-6.708	P=0.000*	Z=-5.578	P=0.000*

Z value of Mann-Whitney U test;
X2 value of Kruskal-Wallis test;
*Significant at P ≤ 0.05

Table 4. *Relation between demographic characteristics and Fear from COVID-19 among the studied subjects.*

Demographic characteristics	Fear from COVID-19			
	Middle-aged group (N=94)		Older adults group (N=91)	
	Mean ± SD	Median (Min-Max)	Mean ± SD	Median (Min-Max)
Sex				
Male	8.72±1.54	8 (7-13)	17.04±5.28	15 (10- 25)
Female	17.89±3.76	18 (13-25)	26.66±3.32	27 (19-30)
Test of significance	Z=-8.190	P=0.000*	Z=-7.198	P=0.000*
Residence				
Urban	8.27±1.09	8 (7-10)	14.98±3.68	13.5 (10-23)
Rural	16.76±4.22	16 (11- 25)	26.62±2.19	26 (23-30)
Test of significance	Z=-8.398	P=0.000*	Z=-8.221	P=0.000*
Occupation				
Employee	9.55±2.82	8 (7- 19)	_____	_____
Worker	13.58±4.582	10 (10- 13)	_____	_____
Housewife	19.37±3.22	19 (13- 25)	27.52±2.95	28 (19-30)
Farmer	10.75±1.50	8 (8 - 24)	22. 60±4.28	24 (15- 25)
Private work	12.25±7.03	12 (7- 21)	21.40±7.50	18 (15- 30)
Retired	_____	_____	17.83±5.69	16 (10- 26)
Test of significance	X2 =35.649	P=0.000*	X2 =29.164	P=0.000*
Marital Status				
Single	7.00±0.00	7 (7- 7)	_____	_____
Married	12.39±5.22	10 (7- 25)	19.79±6.33	21.5 (10- 30)
Widow	14.67±5.19	13 (8-22)	23.44±6.51	26 (11-30)
Divorced	8.50±3.00	7 (7- 13)	13.50±0.71	13.5 (13-14)
Test of significance	X2 =10.901	P=0.012	X2 =8.198	P=0.017
Education				
Illiterate	20.27±5.22	22 (11-25)	27.68±2.88	29 (19-30)
Read and write	16.64±4.78	19 (10-21)	25.00±2.49	26 (18-26)
Primary education	14.25±3.53	16 (7-18)	20.81±4.61	24 (14 - 25)
Diplome	9.70±3.86	8 (7-15)	16.09±4.33	13.5 (12- 24)
University	9.30±2.41	8.5 (7-19)	10.83±0.75	11 (10-12)
Test of significance	X2 =47.024	P=0.000*	X2 =69.451	P=0.000*
Income				
Enough	21.17±2.20	21 (18- 25)	29.42±0.51	29 (29-30)
Not enough	10.24±3.08	9 (7- 18)	19.42±6.06	20 (10-29)
Test of significance	Z=-6.605	P=0.000*	Z=-5.533	P=0.000*

Z value of Mann-Whitney U test;
X2 value of Kruskal-Wallis test;
*Significant at P ≤ 0.05

Table 5. *Relation between COVID-19 knowledge & preventive practices and fear from COVID-19 among the studied subjects.*

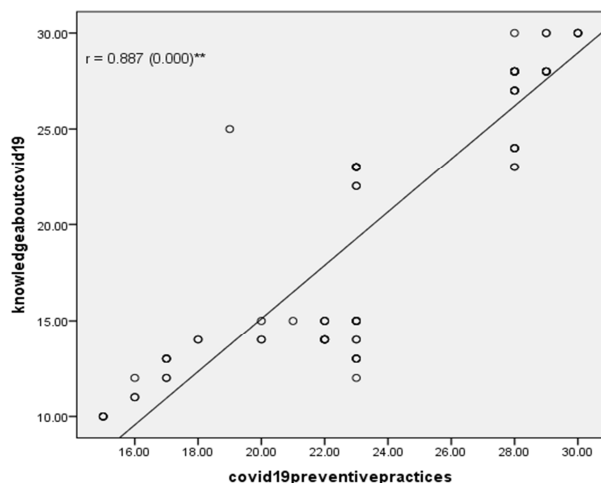| Items	Fear from COVID-19			
	Middle-aged group (N=94)		Older adults group (N=91)	
	Mean ± SD	Median (Min-Max)	Mean ± SD	Median (Min-Max)
COVID-19 Knowledge				
Good	7.97±2.01	8 (7-19)	12.63±1.33	13 (10- 15)
Average	9.82±0.64	10 (9- 11)	18.09±1.514	18 (16- 20)
Poor	16.98±4.16	16.5 (11- 25)	26.18±2.49	26 (21-30)
	Kruskal-Wallis test			
Test of significance	X2	P	X2	P
	74.515	0.000*	72.073	0.000*
COVID-19 preventive practices				
Satisfactory	7.88±0.79	8 (7-10)	12.84±1.53	13 (10- 16)
Unsatisfactory	15.63±4.61	14.5 (10- 25)	25.02±3.62	26 (16- 30)
	Mann-Whitney U test			
	Z	P	Z	P
Test of significance	-8.277	0.000*	-7.859	0.000*

*Significant at P ≤ 0.05

Figure 2. *Correlation between total scores of COVID-19 knowledge and preventive practices among middle aged group.*
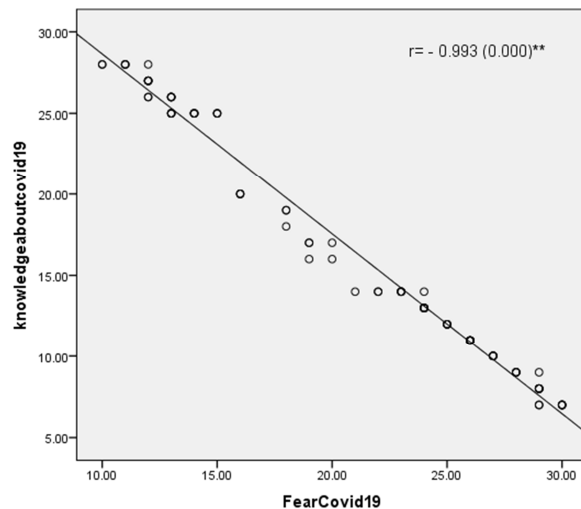

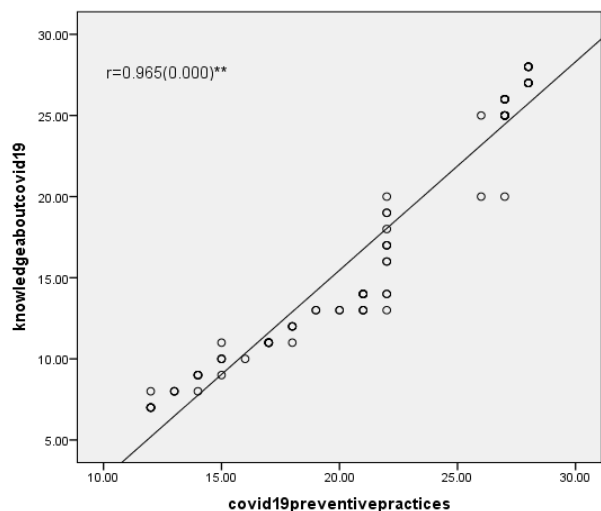***Figure 5.*** *Correlation between total scores of COVID-19 knowledge and fear from COVID-19 among older adults group.*

Figure 3. *Correlation between total scores of COVID-19 knowledge and preventive practices among older adults group.*
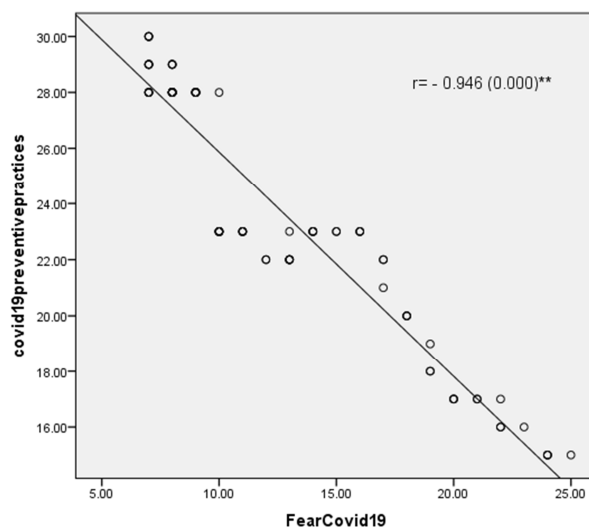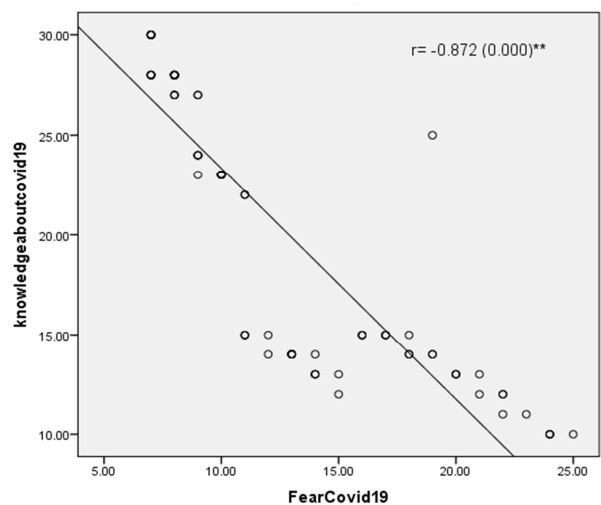

Figure 6. *Correlation between total scores of COVID-19 preventive practices and fear from COVID-19 among middle aged group.*

Figure 4. *Correlation between total scores of COVID-19 knowledge and fear from COVID-19 among middle aged group.*
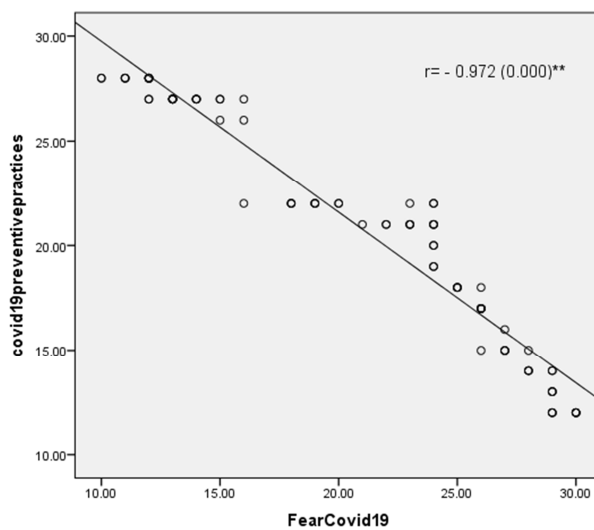

Figure 7. *Correlation between total scores of COVID-19 preventive practices and fear from COVID-19 among older adults group.*

Table 6. Relation between COVID-19 knowledge and preventive practices among the studied subjects.

Items	COVID-19 Knowledge			
	Middle-aged group (N=94)		Older adults group (N=91)	
	Mean ± SD	Median (Min-Max)	Mean ± SD	Median (Min-Max)
COVID-19 preventive practices				
Satisfactory	27.58±1.89	28 (23- 30)	25.84±1.90	26 (20- 28)
Unsatisfactory	15.29±4.08	14 (10- 23)	11.79±3.39	11 (7- 20)
		Mann-Whitney U test		
Test of significance	Z	P	Z	P
	8.276	0.000*	8.117	0.000*

*Significant at $P \leq 0.05$

4. Discussion

Coronavirus disease 2019 (COVID-19) is a novel disease that has caused numerous effects on publics' daily life unusually. A sudden outbreak of new COVID-19 has happened since December 2019 in Wuhan City, Hubei Province, a central city in the people's republic of China, where transference is tremendously suitable to attaching all other places inside China and outside it precisely African countries like Algeria, Nigeria and Egypt Qian et al., [42].

As the World Health Organization has declared the fast-spreading of COVID-19 as an epidemic Saadat et al., [48]. The main step to fight any infectious disease pandemic in nature is to evaluate knowledge and preventive practices about the disease. Simultaneously, the effect of a pandemic on psychological responses such as fear Doshi et al. [20]. Therefore; this study was aimed to determine knowledge, preventive practices, and fear toward COVID-19 among middle aged and older adults: during the novel coronavirus outbreak.

Regarding demographic characteristics and medical history of the studied subjects, the current study showed that most of the participants of the two groups either middle aged or older adults were male. It is in the same line with Kebede et al., [32] who stated that more than three fourths of respondents were male. In contrast, Azlan et al., [10] reported that more than half of the participants were female. From the researchers' point of view, this difference may be due to variation in the sample size of participants.

Concerning the educational level, the results of this study revealed that diplome education was prevailing most of the two groups. This finding is in contrast with a study carried out by Geldsetzer., [23] who stated that Bachelor's degree was prevailing among participants. This may be related to the distinction of setting and different nature of studied subjects. Regarding participants' medical history, it was found that diabetes mellitus was the most prevailing disease among middle aged and older adults groups. These results agree with Wolf et al., [55] who said that more than half of participants have diabetes mellitus.

As regard to the source of COVID-19 knowledge among middle aged and older adults, the present study showed that social media was considered the most common source of COVID-19 knowledge among both groups, this result is in accordance with Abdelhafiz et al. [1] who found that the most commonly stated sources of COVID-19 knowledge were social media. In addition, Olaimat et al., [40] stated that social media was the most common source of knowledge about COVID-19. Additionally, Bhagavathula et al., [12] reported that the main source of COVID-19 information was social media. This may be due to social media have a wide range of channels as television, radio, and so on. Also, it is available at any time and easy to access.

Concerning knowledge, preventive practices, and fear from COVID-19, It was noticed that there was a statistically significant difference was found between middle aged group and older adults groups regarding COVID-19 knowledge as about two fifths of middle aged group had good COVID-19 knowledge compared to one third of older adults. This coincides with a study conducted in Egypt by Abdelhafiz et al. [1] who emphasized that the mean knowledge score about COVID-19 was significantly lower among older participants. This finding may be due to that most of the older adults during the COVID-19 outbreak live alone and no one visits them to increase their awareness about COVID-19. Also, most of the older adults were had a lower educational level than middle aged.

In relation to COVID-19 preventive practices, the current study showed that there was a statistically significant difference was found between middle aged group and older adults group as more than two fifths of middle aged group had satisfactory COVID-19 preventive practices in comparison with more than one third of older adults group. It is in the same direction with Zhong et al., [64] who reported that older adults are more likely to have inappropriate preventive practices towards COVID-19. Additionally, Salman et al., [49] revealed that geriatric populations would be more likely to have poor knowledge and preventive practices. These results are inconsistent with a study done in the Kingdom of Saudi Arabia by Al-Hanawi et al., [4] who found that older adults are likely to have better knowledge and practices than younger people. This may be due to most of the older adults in our study who had low socioeconomic status as most of them retired which discourage them to be compliant with COVID-19 preventive practices.

Regarding fear from COVID-19, the current study showed that there was a statistically significant difference was found

between middle aged group and older adults group as older adults had a higher level of fear than middle aged. This come in accordance with Guterres., [27] who said that the COVID-19 pandemic is causing untold fear and suffering for older adults across the world. These results may be due to older adults are twice as likely to have serious COVID-19 Centers for disease control and prevention [16]. This is expected because as people age, their immune systems change, making it harder for their body to fight off infection and diseases, and because many older adults are also more likely to have health conditions that make it harder to cope with and recuperate from. Age increases the risk that the lungs or respiratory system will shut down when an older person has COVID-19 disease Cameron., [13].

Concerning the relation between demographic characteristics and both COVID-19 knowledge & preventive practices among the studied subjects, the current study revealed that males obtain higher mean scores of COVID-19 knowledge & preventive practices than females in middle aged and older adults groups. It is in accordance with a study conducted by Almofada et al., [6] who revealed that males had a higher percentage of COVID-19 knowledge compared to females. However, these results contrast withAl-Hanawi et al., [4] who reported that males have less knowledge and less good practice toward COVID-19 than females. Additionally, Hezima et al., [30] found that female participants obtain higher mean scores of COVID-19 knowledge than male participants (P = 0.001).

As regard to residence, the current study revealed that there was statistically significant relation was found between residence and both COVID-19 knowledge & preventive practices among the studied subjects as study subjects who were residing in urban areas had both higher scores of COVID-19 knowledge and preventive practices than others in both middle aged and older adults group. It is in the same line with Zhong et al., [64] who revealed that rural people with low income are more likely to have poor knowledge, negative attitudes, and inappropriate preventive practices towards COVID-19. Besides, Salman et al., [49] reported that rural populations would be more likely to have poor knowledge and preventive practices.

Concerning income, the current study revealed that there was a statistically significant relation between both COVID-19 knowledge & preventive practices among the studied subjects as the studied subjects with enough income had both higher scores of COVID-19 knowledge and preventive practices than others in both middle aged and older adults group. It is agreed with a study done in Egypt by Abdelhafiz et al. [1] who reported that COVID-19 Knowledge was significantly lower among lower-income participants. Additionally, Azlan et al., [10] reported that higher knowledge scores were obtained among participants in the higher income category as subjects with a high income had money to shop masks, gloves, and other preventive equipment than others.

As detected from this study results regarding the level of education, it was obvious that study subjects with university education had both higher scores of COVID-19 knowledge and preventive practices than others. It is consistent with Zegarra-valdivia et al., [63] who highlighted that Well-educated people have a better understanding of control measures and preventive strategies related to COVID-19. Additionally, Al-Mohrej et al., [7] as well as, Bawazir et al., [11] reported that more educated participants are more knowledgeable regarding preventive measures of diseases than others.

Concerning the relation between demographic characteristics and fear from COVID-19 among the studied subjects, the current study revealed that female and lower educational level participants had a higher level of fear than male and university education participants in both middle aged and older adults groups. It is in the same line with Doshi et al., [20] who reported that females and lower educational status displayed significantly higher odds for a high level of fear compared to their respective counterparts in this study population.

Regarding the relation between residence and fear from COVID-19 among the studied subjects, the current study revealed that study subjects who were living in rural areas had a higher level of COVID-19 fear than those who were living in urban areas. Otherwise, a study was done in Bangladesh by Hossain et al., [31] revealed that Dhaka urban dwellers reported a higher status of COVID-19 fear than rural dwellers this may due to subjects in a rural area had fewer health centers and had difficult to access health centers than who residing in urban, so they fear from acquiring disease than others. Also, the present study showed that there was a statistically significant strong negative correlation between fear from COVID-19 and either total Knowledge about COVID-19 scores & total COVID-19 preventive practices scores in both middle aged and older adults groups. It was in the same line with Hossain et al., [31] who reported that knowledge scores showed contrasting correlation with Fear scores. In contrast, Ali et al., [5] didn't find a correlation between fear and knowledge.

Concerning the relation between total COVID-19 knowledge scores and preventive practices scores among both middle aged and older adults groups. The study revealed that there was a statistically significant strong positive correlation between total COVID-19 knowledge scores and preventive practices scores among study subjects this may due to when an individual had good knowledge about COVID-19 they aware of complications and serious consequences of the disease so they practice preventive measures better than individual with poor knowledge It is agreed with Rahman& Sathi., [44] who found a positive correlation between the COVID-19 knowledge scores and Preventive practices scores, So a good knowledge is important for a better practice toward COVID-19. On the other hand, a study was conducted in Egypt by Hamza et al., [29] who revealed that no correlation appeared to exist between COVID-19 knowledge and practice. Finally, these previous findings highlight the importance of assessing knowledge, preventive practices, and fear toward COVID-19 among middle aged and older adults: during the novel coronavirus outbreak.

5. Conclusion

Based on the findings of the current study, it can be concluded that social media was considered the most common source of COVID-19 knowledge among both middle aged and older adults groups. Middle aged adults had a significantly high score of COVID-19 knowledge and preventive practices and lower level of COVID-19 fear than older adults as a strong negative correlation between fear from COVID-19 and either COVID-19 knowledge & preventive practices were found. This finding indicates that increase awareness about COVID-19 and how to prevent it important for decreasing the level of COVID-19 fear.

6. Recommendations

Based on the results of the present study the following recommendations are suggested:
1) Educational programs should be planned and implemented by nurses in different care settings regarding COVID-19 and providing the public with educational materials as; books, pamphlets, and videos to increase their awareness about COVID-19 and promoting their COVID-19 preventive practices to stop its spread.
2) Development and implementation of psychological rehabilitation programs for the public to alleviate their COVID-19 fear and help them to cope with novel coronavirus outbreak.
3) Future researches are needed to assess factors that affecting COVID-19 knowledge, preventive practices, and level of COVID-19 fear.

Acknowledgements

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