

Knowledge, Attitude and Practices of Primary Schools' Teachers Regarding COVID-19 at Assiut City

Alshymaa Khaled Sabry¹, Hoda Diab Fahmy Ibrahim² & Shymaa Abdel Rahim Khalaf³

¹ Demonstrator at Family and Community Health Nursing Department, Faculty of Nursing, Assiut University, Egypt

² Professor of Community Health Nursing, Faculty of Nursing, Assiut University, Egypt

³ Assistant professor of Community Health Nursing, Faculty of Nursing, Assiut University, Egypt

Abstract

Background: Adequate understanding and precautionary behaviors are of vital importance to contain the spread of coronavirus disease 2019. **Aim:** To assess knowledge, attitude and practices of primary schools' teachers regarding coronavirus disease 2019. **Methods:** Descriptive research design. **Settings:** Primary schools included 400 teachers. **Tools:** **Tool (I) part (1):** Personal data, **part (2):** Teacher's knowledge. **Tool (II):** Teachers' attitude toward coronavirus disease 2019 and **Tool (III):** Observational checklist. **Results:** Illustrated that 70.5% of teachers were had poor score of knowledge, 57.5% had negative attitude toward Coronavirus disease 2019 and 81.25% of them were had unsatisfactory practices. There was statistical significant difference between age, years of experience and place of residence of teachers with the total score of knowledge, there was statistical significant difference between years of experience and residence with total score of attitude. Also there was statistical significant difference between teachers' age, educational level and years of experience with the total score of practices. **Conclusion:** Most of the studied teachers had poor score of knowledge and negative attitude toward coronavirus disease 2019 while the majority of them had unsatisfactory practices. **Recommendations:** Educational and training programs should target schools' teachers about coronavirus disease 2019.

Keywords: Attitude, coronavirus disease 2019, knowledge, practices & primary school teachers.

Introduction:

Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) which named as Coronavirus Disease 2019 or COVID19 is a global health threat with international public health emergency. Since the start of the outbreak, the global pandemic has surpassed 97.8 million cases with more than two million deaths worldwide. Among the total of more than 220 countries and territories affected by the pandemic. In Egypt, 279,184 confirmed cases with 16,002 deaths were documented (Pearson et al., 2020 & Walker et al., 2020).

Clinical symptoms include fever, cough, fatigue, malaise and shortness of breath. Global concerns about the virus have risen due to its high transmission capability, which may be coupled with morbidity and mortality. Risk factors of being infected with COVID 19 as: Smoking, older people, young age, obesity and pregnancy. Diagnosis of COVID19 is through the collection of upper respiratory samples (nasopharyngeal and oropharyngeal swabs) and lower respiratory samples (sputum) (Ahmed, 2020, Centers for Disease Control and Prevention (CDC), 2020, Holshue et al., 2020, Sahu et al., 2020 & Vodcar et al., 2020).

World Health Organization (WHO) has provided a series of guidelines to protect and ensure workplace

safety during COVID-19 outbreak, including: Social distancing, wearing face masks, strict hand washing, facility cleaning, national travel advice and stay at home campaign. So, the public compliance to universal protective measures is the key factor to mitigate the spread of COVID-19 (Cirrincione et al., 2020, Feng et al., 2020, Ferguson et al., 2020 & WHO_a, 2020).

Schools have been classically recognized as spreading places for infectious diseases, as they are usually confined and crowded spaces where close-contact between teachers, pupils and other school personnel occurs. However, with the burden of COVID19 transmission, protection against exposure remains essential in school settings. Because of the highly transmissible nature of COVID-19, along with mixing a lot of people for prolonged periods together. It is vital for teachers to have obvious knowledge about the critical need for applying the protective measures against COVID 19 to protect their pupils and therefore protecting the whole society. (International Federation of Red Cross and Red Crescent Societies (IFRC), 2020, Levinson et al., 2020, United Nations Educational, Scientific and Cultural Organization, (UNESCO), 2020 & WHO_b, 2020).

Community Health Nurses (CHNs) through her role as a health educator must educate teachers of the primary schools to recognize the disease and institute the appropriate preventive and supportive protective measures to stop its spread. (CHNs) are on the frontline of the public health crisis the world now knows as the COVID19 pandemic. In community health practice providing nursing care is different than in hospitals, because the target of service expands beyond the individuals to include families, groups and communities. As well as they should collaborate with other community groups to contain this pandemic (Deng & Peng, 2020, European Center for Disease Prevention and Control, 2020 and United Nations Children's Emergency Fund, (UNICEF), 2021).

Significance of the study:

Globally, WHO reported the confirmed COVID-19 cases were over 179 million with 3,895,661 deaths. In Egypt; 19309 deaths, 341188 cases. The COVID-19 pandemic has profound implications for frontline teachers who continuously keep contact with the most vulnerable groups of community including school pupils who constituting a large group of the community and coming to school from a different geographic and cultural diverse areas (Belingeri et al., 2020 & Burdorf et al., 2020).

Most of the previous researches have primarily focused on healthcare professionals. Schools are a major concern for novel COVID19 transmission due to the social interactions among school pupils, crowding in institutional environments and extracurricular events that may increase risk of infection. Nevertheless, teachers play an important role in controlling a virus outbreak, while they perform their core tasks in schools (Bonell et al., 2020 & Sim, 2020).

In Egypt, there are few studies that targeted school teachers despite their crucial role in mitigating the spread of this pandemic, so that this study aimed to assess teachers' knowledge, attitude and practices regarding COVID 19.

Aim of the study:

To assess knowledge, attitude and practices of primary school teachers regarding COVID19 at Assiut City.

Specific objectives:

- 1- To assess primary school teachers' knowledge regarding COVID 19.
- 2- To assess primary school teachers' attitude regarding COVID 19.
- 3- To assess primary school teachers' practice regarding COVID 19.

Research questions:

1. What are the levels of knowledge, attitude and practices of primary school teachers regarding COVID 19?
2. What are the effect of school teacher's personal data on their knowledge, attitude and practices regarding COVID19?

Subjects and method:

Research design: Descriptive research design.

Setting:

The total number of the primary schools at Assiut city is (70) schools 36 East and 34 West of Assiut. Every 5th school was selected randomly (5th, 10th, 15th, and 70th). The numbers of selected schools were (14) schools (7) East and (7) West, from which (5) private schools and (9) governmental schools.

Sampling and sample size estimation:

Type of sample: Systematic random sample with probability proportionate to its size.

Sample size: Was calculated by using software EPI/Info 2000 statistical package, with 99% Confidence Interval (CI), total number of the primary schools' teachers at Assiut City were 2665 teachers. Calculated sample size was 384 teachers. A Total number of 400 teachers were included in the study to avoid refusal rate. The number of teachers that was taken from each school calculated by number of teachers in that school divided by total number of teachers at the selected 14 schools (605), then multiplied by the estimated sample size 400, The studied teachers were selected by systematic random sampling from their daily attendance record every (3rd, 5th, 7th,etc.) (Skinner, 2017).

N O	School Name	Number of teachers	Sample taken
1-	Al - Rashad school	32	21
2-	Al- Ajmy school	16	11
3-	Salah Salem school	65	43
4-	Taha Hussein school	41	27
5-	Al-Horia school	56	37
6-	Al -Faranseskan school (private)	52	34
7-	Al - Akbat school	28	19
8-	Ghadja bent Ghowailed school	76	50
9-	Al-Waledia school	27	18
10-	Al- Nasr school	38	25
11-	Thawret 25 language school (private)	27	18
12-	Al- Salam developed school (private)	78	52
13-	Dar Al-Aksa school (private)	40	26
14-	Al-Mostakbal language school (private)	29	19
Total number of teachers		605	400

Tools of the study: A structured interviewing questionnaire was developed by the researchers to collect the necessary data, it was designed on the basis of guidelines for COVID19 prevention and control issued by the WHO,2020 after reviewing the relevant literature; sheet was designed in Arabic form and included three tools as the following:

Tool I: It consisted of two parts: **Part (1):** Teacher’s personal data such as: Age, gender, educational level, marital status, residence, years of experience, attending educational programs about COVID 19 and type of school.

Part (2): Included questions to assess teacher’s knowledge about COVID 19, it was included 14 items such as: Definition, causative agent, risk factors of COVID19, modes of transmission, incubation period, signs and symptoms, diagnosis, methods of supportive treatment, complications of COVID19, home isolation, home isolation for contacts and preventive measures of COVID19 (Zhong et al., 2020).

Scoring system of the tool:

Total grades of knowledge were 76 grades for 14 items, one grade was given for each correct answer and zero was given for each incorrect and didn’t know answer. Total score was calculated by summing up and converted into percent score as the following:

Poor score = < 50 %, Fair = 50-70% and Good = >70% (Khalaf et al., 2015).

Reliability of the tool:

Reliability was applied for testing the internal consistency of the tool. The value of Cronbach’s alpha was 0.727.

Tool 2: Primary school teachers’ attitude toward COVID19:

Teacher’s attitude toward protective measures against COVID19 was assessed by using rating scale. Five points Likert scale adapted from Spector, (1992), (strongly agreed, agreed, uncertain, disagreed, strongly disagreed). Which modified by Akalu et al., (2020) to three points (agree, uncertain and disagree); it contained 18 statements expressing points of views of the primary school teachers toward protective measures of COVID19.

The scale was including (14) positive statements such as reporting to the local health authority when detecting a case, hand washing before and after entering the class, COVID19 is a curable disease, cleaning and sterilizing the surfaces was important to prevent infection, wearing a mask, attending training and educational programs about COVID19, being a teacher increase risk of infection, if they had infected with COVID19, but no signs or symptoms appeared, applying the standardized protective measures, worry that a family member might get COVID19, medical consultation if infection had occurred, if hospitals had

a sufficient supplies to deal with this pandemic, agree to get COVID19 vaccine, COVID19 vaccine is effective to prevent infection.

Attitude scoring system: The responses were scored (2,1 and 0) respectively and the scoring was reversed for the negative statements. Total score calculated by summing up and converted into percent score. Primary school teachers’ attitude considered positive if the score was $\geq 60\%$ and negative attitude if the score was $< 60\%$ (Solliman et al., 2013).

Reliability of the tool:

The value of Cronbach’s alpha was 0.873.

Tool 3: Primary school teachers’ observational checklist: it was developed according to the guidelines published by WHO, (2020,) regarding COVID 19 preventive practices. As well as, there were some modifications had been done by the researchers. It included 12 items:

1- Wash hands thoroughly for 20 seconds with running water and soap.		
2- Use of sanitizers such as alcohol		
3- Applying social distancing when dealing with others.		
4- Wearing mask		
5- Using the tissue or elbow to cough or sneeze.		
6- Cleaning frequently touched surfaces often using standard products, such as detergents and chlorine.		
7- Minimizing contact by using small groups of pupils.		
8- Not to touch their mouth, eyes and nose.		
9- Providing help for students during hand washing.		
10- Remove any educational materials and learning aids that are touched by students.		
11- Use teaching aids and learning material for hand washing such as (role playing or songs, storytelling).		
12- Designing a game or competitive activities between the pupils including the correct technique of hand washing.		

Scoring system of the tool:

If the item was done scored 1 and zero grade for not done. If done $< 50\%$ considered unsatisfactory, if done $\geq 50\%$ considered satisfactory (Ahmed et al., 2016).

Reliability of tool:

The value of Cronbach’s alpha reliability test was 0.854.

Validity of tools:

Tools of the study were checked and revised by panel of 5 experts of Community Health Nursing, faculty of nursing, Assiut university who reviewed the tools for

clarity, relevance, comprehensiveness, understanding and applicability. Corrections were done according to the modifications needed.

Methodology:

Administrative phase: Before conducting the study, an official letter approval was obtained from the Dean of the Faculty of Nursing, Assiut University to the Directorate of Education in Assiut City; this letter included a permission to carry out the study and explained its aim and nature.

Pilot study: It was conducted before starting of data collection on 10% (40) teachers which were excluded from the total study sample because there were modifications in the tool. The aim of this study was to test the clarity of the tool and to estimate the time required to fill in the questionnaire.

Data collection phase:

Ethical considerations:

Research proposal was approved from the Ethical Committee in the Faculty of Nursing, Assiut University. There was no risk for the study subjects during the application of the research. The study followed common ethical principles in research. Oral consent was obtained from teachers who were willing to participate in the study after explaining the nature and purpose of the study. Confidentiality and anonymity was assured. Study subjects had the right to refuse to participate or withdraw from the study without any rational at any time and study subject's privacy was considered during collection of data.

Results:

Table (1): Distribution of the participated teachers according to their personal data at Assiut City

Items	No. (400)	%
Age (years):		
< 40	204	51.0
40 - < 50	107	26.8
≥ 50	89	22.2
Mean ± SD (Range)	40.85 ± 8.67 (25.0-59.0)	
Sex:		
Male	144	36.0
Female	256	64.0
Educational level:		
Secondary/ Teaching diploma	88	22.0
University	206	51.5
Master/ PHD	106	26.5
Marital status:		
Single	46	11.5
Married	327	81.8
Widowed	27	6.8
Residence:		
Rural	117	29.3
Urban	283	70.8
Years of experience:		
< 10	106	26.5
10 - < 20	150	37.5
≥ 20	144	36.0
Mean ± SD (Range)	16.84 ± 10.08 (1.0-38.0)	

Field work:

Data was collected during the period from first of October to the end of December, 2021. The researchers introduced themselves and explained the purpose of the study and the main parts of the questionnaire for teachers. The researchers obtained informed oral consent from each teacher to participate in the study. The researchers interviewed each teacher individually according to their available work time to obtain the necessary information.

The average time taken for completing each questionnaire was around 15-20 minutes depending on the teacher's responses. Observational checklist was done by the researchers themselves, it took from 10-15 minutes, about 10 -13 sheets/day. All of these activities done at schools 3days /week, divided into two days morning and afternoon period and one-day morning period only.

Statistical analysis:

Data entry and analysis were done using SPSS version 22 "Statistical Package for Social Science". Data was presented as number, percentage, mean and standard deviation. Chi-square test was used to compare between qualitative variables. Pearson correlation was done to measure correlation between quantitative variables. P-value considered statistically significant when its value ≤ 0.05.

Items	No. (400)	%
Attending educational programs about COVID-19:		
Yes	105	26.3
No	295	73.8
Type of school:		
Governmental	269	67.2
Private	131	32.8

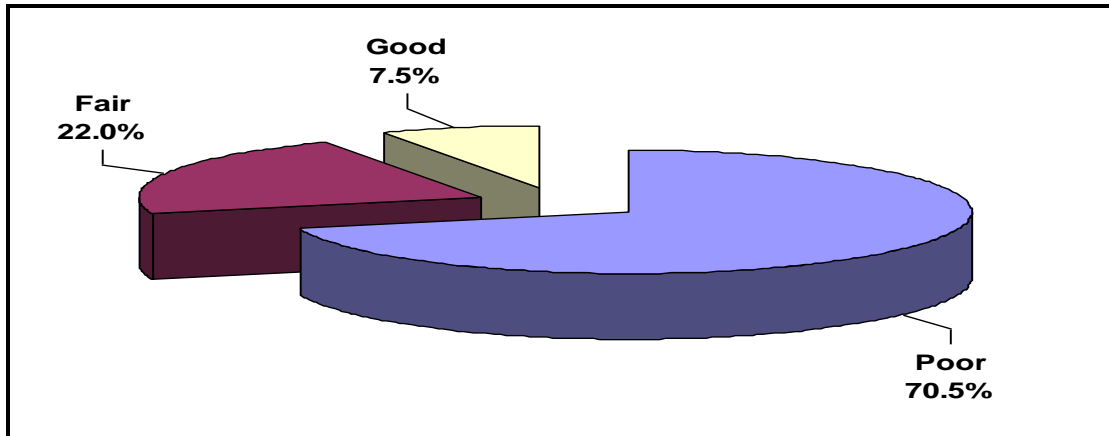


Figure (1): Total score of studied teachers' knowledge regarding COVID 19 at Assiut City

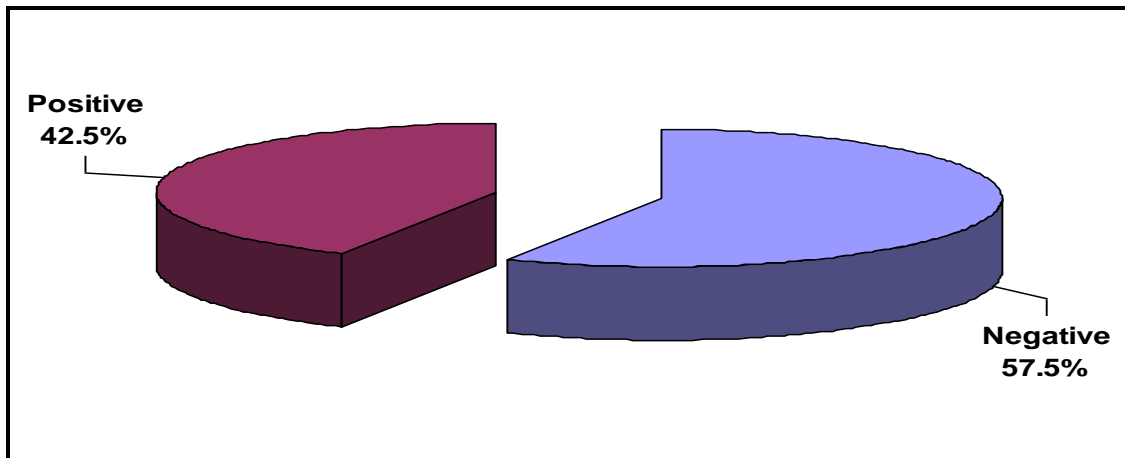


Figure (2): Total score of studied teachers' attitude toward COVID19 at Assiut City

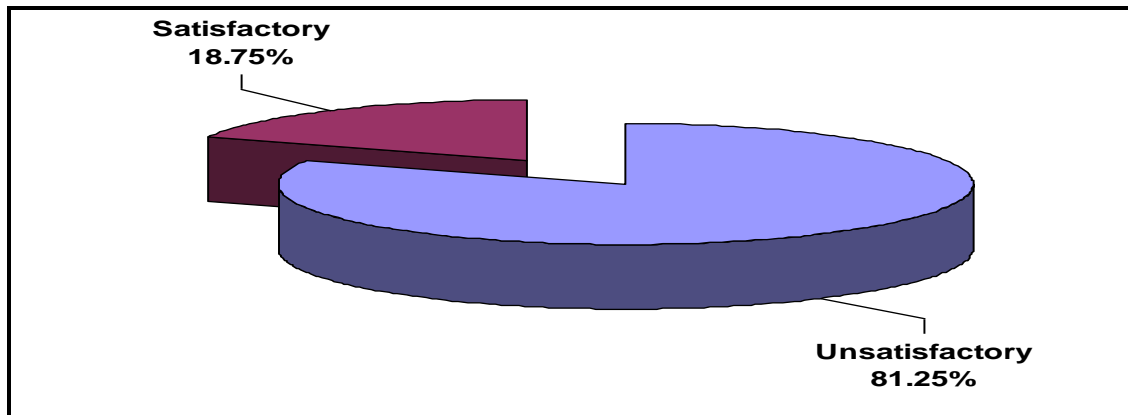


Figure (3): Total score of studied teachers' practices regarding COVID19 at Assiut City

Table (2): Relation between some personal data of the studied teachers and their total score of knowledge regarding COVID 19 at Assiut City

Items	Total score of knowledge (n= 400)						P-value
	Poor		Fair		Good		
	No.	%	No.	%	No.	%	
Age (years):							
< 40 (204)	162	79.4	36	17.6	6	2.9	0.000*
40 - < 50 (107)	63	58.9	35	32.7	9	8.4	
≥ 50 (89)	57	64.0	17	19.1	15	16.9	
Sex:							
Male	102	70.8	31	21.5	11	7.6	0.984
Female	180	70.3	57	22.3	19	7.4	
Educational level:							
Secondary/ diploma	56	63.6	24	27.3	8	9.1	0.540
University	147	71.4	43	20.9	16	7.8	
Master/ PHD	79	74.5	21	19.8	6	5.7	
Marital status:							
Single	39	84.8	6	13.0	1	2.2	0.051
Married	229	70.0	72	22.0	26	8.0	
Widowed	14	51.9	10	37.0	3	11.1	
Years of experience:							
< 10	90	84.9	16	15.1	0	0.0	0.000*
10 - < 20	105	70.0	34	22.7	11	7.3	
≥ 20	87	60.4	38	26.4	19	13.2	
Residence:							
Rural	91	77.8	25	21.4	1	0.9	0.004*
Urban	191	67.5	63	22.3	29	10.2	
Attending educational programs about COVID 19:							
Yes	78	74.3	23	21.9	4	3.8	0.237
No	204	69.2	65	22.0	26	8.8	
Type of school:							
Governmental (269)	163	60.6	76	28.3	30	11.2	0.000*
Private (131)	119	90.8	12	9.2	0	0.0	

Chi-square test

*Statistically Significant ($p < 0.05$)

Table (3): Relation between some personal data of the studied teachers and their total attitude score toward COVID 19 at Assiut City

Items	Total attitude score (n= 400)				P-value
	Negative		Positive		
	No.	%	No.	%	
Age (years):					
< 40	109	53.4	95	46.6	0.008*
40 - < 50	75	70.1	32	29.9	
≥ 50	46	51.7	43	48.3	
Sex:					
Male	88	61.1	56	38.9	0.273
Female	142	55.5	114	44.5	
Educational level:					
Secondary/ diploma	49	55.7	39	44.3	0.920
University	119	57.8	87	42.2	
Master/ PHD	62	58.5	44	41.5	
Marital status:					
Single	19	41.3	27	58.7	0.018*
Married	191	58.4	136	41.6	
Widowed	20	74.1	7	25.9	

Items	Total attitude score (n= 400)				P-value
	Negative		Positive		
	No.	%	No.	%	
Years of experience:					
< 10	45	42.5	61	57.5	0.000*
10 - < 20	102	68.0	48	32.0	
≥ 20	83	57.6	61	42.4	
Residence:					
Rural	46	39.3	71	60.7	0.000*
Urban	184	65.0	99	35.0	
Attending training programs about COVID -19:					
Yes	60	57.1	45	42.9	0.931
No	170	57.6	125	42.4	
Type of school:					
Governmental	179	66.5	90	33.5	0.000*
Private	51	38.9	80	61.1	

Chi-square test

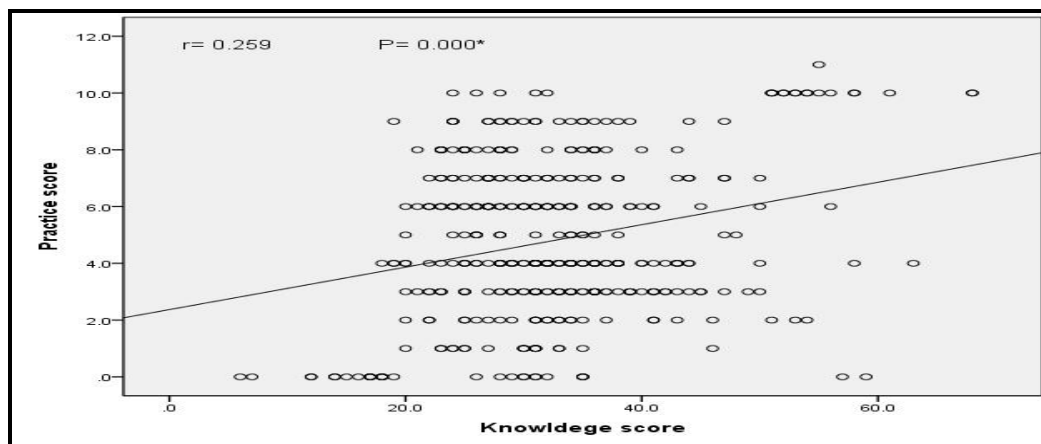
*Statistically Significant ($p < 0.05$).

Table (4): Relation between some personal data of the studied teachers and their total score of practice regarding COVID19 at Assiut City

Items	Total score of practice (n= 400)				P-value
	Not done		Done		
	No.	%	No.	%	
Age (years):					
< 40	152	74.5	52	25.5	0.001*
40 - < 50	90	84.1	17	15.9	
≥ 50	83	93.3	6	6.7	
Sex:					
Male	110	76.4	34	23.6	0.062
Female	215	84.0	41	16.0	
Educational level:					
Secondary/ diploma	83	94.3	5	5.7	0.002*
University	160	77.7	46	22.3	
Master/ PHD	82	77.4	24	22.6	
Marital status:					
Single	30	65.2	16	34.8	0.012*
Married	272	83.2	55	16.8	
Widowed	23	85.2	4	14.8	
Years of experience:					
< 10	65	61.3	41	38.7	0.000*
10 - < 20	124	82.7	26	17.3	
≥ 20	136	94.4	8	5.6	
Residence:					
Rural	94	80.3	23	19.7	0.765
Urban	231	81.6	52	18.4	
Attending training programs about COVID 19:					
Yes	82	78.1	23	21.9	0.335
No	243	82.4	52	17.6	
Type of school:					
Governmental	244	90.7	25	9.3	0.000*
Private	81	61.8	50	38.2	

Chi-square test

*Statistically Significant ($p < 0.05$)



Pearson correlation

Figure (4): Correlation between the total score of knowledge and practices regarding COVID19 among primary schools' teachers at Assiut City

Table (1): Reveals that 51.0%, 64.0%, 51.5% and 70.8% of studied teachers were aged <40 years old, were females, had university education and were from urban areas. Also 37.5% had 10: <20 years of experience and 73.8% of them didn't attend educational programs about COVID -19.

Figure (1): Illustrates that 70.5% of teachers were had poor score of knowledge, while 22.0% had fair score and only 7.5 % of them had good score of knowledge regarding COVID19.

Figure (2): Represents that 42.5% of the teachers were had positive attitude while 57.5 % of teachers had negative attitude toward COVID19.

Figure (3): Presents that 81.25 % of teachers had unsatisfactory practices of protective measures of COVID19.

Table (2): Reveals that there was statistically significant difference between the age, years of experience, place of residence and type of school with the total score of knowledge regarding COVID19, P values = 0.000, 0.000, 0.004, and 0.000 respectively.

Table (3): Discloses that there was statistically significant difference between the teachers' age, marital status, years of experience, residence and type of school with total score of attitudes toward COVID19 P-values = 0.008, 0.018, 0.000, 0.000 and 0.000 respectively.

Table (4): Represents that there was statistically significant difference between the teachers' age, educational level, marital status, years of experience and type of school with the total score of practices of COVID19 with P values= 0.001, 0.002, 0.012, 0.000 and 0.000 respectively.

Figure (4): Donates that there was positive correlation between the total score of knowledge and attitude regarding COVID19 among primary schools' teachers R= 0.278.

Discussion:

Sudden outbreak of the novel coronavirus pandemic resulted in an enormous impact on education systems worldwide. The recurrent nature and high infectiousness of COVID19 led many countries around the world to announce the importance of protective measures at the educational institutions. Educational researchers have repeatedly stressed the importance of teachers as the frontline workers in educational reform. Teachers are encouraged to focus on the promotion of good health behaviors and simple public health interventions (**Koo 2020 & Lee, 2020**).

The present study aimed to assess knowledge, attitude and practices of primary schools' teachers regarding COVID19 at Assiut City.

The current findings disclosed that less than three-quarters of teachers were had poor score of knowledge regarding COVID19. This was due to the shortage of health education campaigns related to COVID19 among the studied teachers. This finding was in contrast with **Chen et al, (2021)** who conducted a study in China to assess knowledge, attitudes and practices toward COVID-19 among teachers in Shenzhen and stated that more than three-fifths of the studied sample had good score of knowledge. As well as the current study were not similar with **Ali et al., (2020)** who performed a study to assess knowledge, attitude and practice toward COVID-19 among Iraqi people and founded that more than three-quarters were had a good score of knowledge.

The proposed study results revealed that nearly three-fifths of the studied teachers had negative attitude toward COVID19. This was due to that most of the studied teachers adapt negative attitude and they were afraid from the epidemic due to lack of

awareness about the epidemic combined with the widespread of false messages about the epidemic that need to be corrected. This result was in contrast with **Chen et al., (2021)** who cleared that the majority of the studied sample had positive attitude. Nevertheless, this result was in contrast with **Fan et al., (2021)** who performed a study in China to investigate knowledge, attitude and practice of personal protection among different types of workers returning to work under COVID-19 epidemic and showed that the vast majority of the studied sample had positive attitude toward COVID 19.

The present study showed that the majority of the studied primary schools' teachers had unsatisfactory practices regarding protective measures against COVID19. The unsatisfactory practice of the proposed studied teachers was due to lack of health intervention programs regarding protective behaviors to minimize the infection and lack of awareness among the studied teachers about good COVID 19 practices.

This was in contrast with **Chen et al., (2021)** who stated that the majority of teachers had satisfactory practices and **Adesegun et al., (2020)** who conducted a study among the public in Nigeria to investigate knowledge, attitudes and practices of COVID-19 and reported that more than three-quarters of the respondents had good practices.

The offered findings found that there was statistical significant difference between total score of knowledge with teacher's age and years of experience (p value= 0.000). This was similar to **Abdeldaim & Elghazally, (2021)** who evaluated the outcome of COVID-19 educational program for school students and teachers in Egypt and founded that the preprogram data revealed that there was a statistical significant association between socio-demographic data and general knowledge where age had a significant association with general knowledge. Also, **Zhong et al., (2020)** who assessed knowledge, attitudes and practices towards COVID19 among Chinese residents during the rapid rise period of the COVID19 outbreak reported that there was a significant difference between total score of knowledge with age and residence.

However, this finding was in contrast with **Singh & Ahuja, (2020)** who carried a study in India to assess knowledge, attitude and practice of general public towards COVID-19 and founded that there was not a significant difference between knowledge score with teachers' age and years of experience.

From the current results it was found that there was significant difference between total score of attitude with teachers' age and residence. This was similar to **Kasemy et al., (2020)** who performed a study among

Egyptians to investigate Knowledge, Attitude and Practice toward COVID19 and founded that there was a significant difference between attitude score with age and residence.

In addition to **Singh & Ahuja, (2020)** who founded that there was significant difference between attitude score with age and residence P value <0.05 , <0.05 , <0.05 respectively and **Al-Hanawi et al., (2020)** who carried a study of knowledge, attitude and practice toward COVID-19 among the public in the Kingdom of Saudi Arabia and founded that there was significant difference between attitude score with age and residence. But this was in contrast with **Chen et al., (2021)** who reported that there was not significant difference between age and total attitude score of studied sample this was due to the differences in the study population, geographic area, time and epidemic phase.

With relevance to the relation between some personal data of the studied teachers and their total score of practices, it was found that there was significant difference between teachers' age, educational level and years of experience with total score of practices regarding protective measures against COVID19. This study was agreed with **Chen et al., (2021)** who founded that there was significant difference between age, education and years of experience with total score of practices.

As well as; **Kasemy et al., (2020)** who reported that there was a significant difference between age and education with the total score of practice. On other side, these results were inconsistent with **Ngwewondo et al., (2020)** who carried a study in Cameroon to assess knowledge, attitudes and practices of COVID19 preventive measures and stated that there was not significant difference between age and educational level with the total score of practice this was due to differences in the study population, time, geographic area and epidemic phase.

As regards the correlation between the total score of knowledge and practice, the present study cleared that there was a positive correlation between the total scores of knowledge, attitude and practices. This was due to appropriate knowledge always influence good practice or practices. As well as these findings clearly indicate the importance of improving population knowledge regarding COVID19 via health education, which may also result in improvements in their practices and attitudes towards COVID-19. This was similar with **Chen et al., (2021)** who founded that there was a significant positive correlation between knowledge and practices. The same observation reported by **Singh & Ahuja, (2020)**.

Conclusion:

The study concluded that most of the studied primary schools' teachers were had poor score of knowledge and negative attitude toward COVID19, while the majority of them had unsatisfactory practices regarding protective measures against COVID19.

Recommendations:

- 1- Health education materials such as pictures and booklets about COVID19 should be provided for school personnel to distribute the needed data on COVID19 preventive measures.
- 2- Educational and training programs should target schools' teachers about COVID 19 protective measures.
- 3- Further research on larger sample size should be performed for generalization of the study findings.

References:

- **Abdeldaim D., & Elghazally N., (2021):** Outcome of COVID-19 Awareness Educational Program for School Students and Teachers, Egypt, Egyptian Family Medicine Journal (EFMJ) Vol.5 (2), P.p.:49-63.
- **Adesegun O., Binuyo T., Adeyemi O., Ehioghae O., & Rabor D., (2020):** The COVID-19 Crisis in Sub-Saharan Africa: Knowledge, Attitudes and Practices of the Nigerian Public, Am. J. Trop. Med. Hyg., 103(5), 2020, pp. 1997–2004, doi:10.4269/ajtmh.20-0461.
- **Ahmed S., (2020):** The Coronavirus Disease 2019 (COVID-19): A Review. J Adv Med Res. 2020; 32(4): Pp.1–9.
- **Ahmed S., Ibrahim H., Mohammed M, & AbdEl-atty N., (2016):** Assessment of Knowledge and Practice of Health Team working in the Blood Banks Regarding Infection Control at Assiut City. Article 7, Vol. (4), issue 9,72:81. Available at: DOI:10.21608/ASN.2016.60332.
- **Akalu Y., Ayelign B., & Molla M., (2020):** Knowledge, attitude and practice towards COVID-19 among chronic disease patients at Addis Zemen Hospital, Northwest Ethiopia. Infect Drug Resist; 13: 1949–1960.
- **Al-Hanawi M., Angawi K., Qattan A., Helmy H., Abudawood Y., & Alqurashi M., (2020):** Knowledge, Attitude and Practice Toward COVID-19 Among the Public in the Kingdom of Saudi Arabia: A Cross-Sectional Study, Frontiers in Public Health, Vol. 8, Article 217.
- **Ali S., Alhusseiny A., Yaseen S., Mustafa M., Al-Rawi R., & Ahmed K., (2020):** Knowledge, attitude and practice toward COVID-19 among Iraqi people: a web-based cross-sectional study, Vo 13. IssSpecial 2.59 Journal of Ideas in Health 2020; 3(Special 2): 258-265.
- **Belingeri M., Paladino M., & Riva M., (2020):** COVID19; health prevention and control in non-healthcare settings. Occup. Med (Lond); P.p. 70:82–83.
- **Bonell C., Torres M., Viner R., & Rogers B., (2020):** An evidence-based theory of change for reducing SARS-CoV-2 transmission in reopened schools. Health & Place; Volume 64.
- **Burdorf A., Porru F. & Rugulies R., (2020):** The COVID-19 (Coronavirus) pandemic: consequences for occupational health. Scand J Work Environ Health; 46 P.p.229–230.
- **Centers for Disease Control and Prevention, (CDC), (2020):** Coronavirus Disease 2019 (COVID-19). Available from: <https://www.cdc.gov/coronavirus/2019-ncov/hcp/faq.html>.
- **Chen H., Zhang M., Su L., Cao H., Zhou X., Gu Z., Liu H., Wu F., Li Q., Xian J., Chen Q., & Lin Q., (2021):** Knowledge, Attitudes and Practices Toward COVID-19 Among Teachers in Shenzhen, original research published: Frontiers in Public Health, Volume 9.
- **Cirincione L., Plescia F., Ledda C., Rapisarda V., Martorana D., & Moldovan R., (2020):** COVID19 pandemic: prevention and protection measures to be adopted at the workplace. Sustainability 2020, 12(9):3603 <https://doi.org/10.3390/su12093603>.
- **Deng S., & Peng H., (2020):** Characteristics of and Public Health Responses to the Coronavirus Disease 2019 Outbreak in China. J. Clin. Med. 9(2):575.
- **European Centre for Disease Prevention and Control, (2020):** COVID-19 in children and the role of school settings in COVID-19 transmission. European Centre for Disease Prevention and Control <https://www.ecdc.europa.eu/en/publications-data/children-and-school-settings-covid-19-transmission> accessed 04 September 2020).
- **Fan Z., Mou Y., Cheng R., Zhao Y. & Zhang F., (2021):** investigation of knowledge, attitude and practice of personal protection among different types of workers returning to work under COVID-19 Epidemic Original research published Volume 9.
- **Feng S., Shen C. & Xia N., (2020):** Rational use of face masks in the COVID-19 pandemic. The Lancet Respiratory Medicine, 8 (5): 434-436.
- **Ferguson N., Laydon D., & Nedjati-Gilani G., (2020):** Imperial College London2020. [cited 2020]. Available from: <https://www.imperial.ac.uk/media/imperialcollege/medicine/sph/ide/gidafellowships/Imperial-College-COVID19-NPI-modelling-16-03-2020.pdf>.
- **Holshue M., DeBolt C. & Lindquist S., (2020):** First case of 2019 Novel Coronavirus in the United

- States. *N Engl J Med*. Vol. (10), P.p. 929-936. <https://doi.org/10.1056/NEJMoa2001191>.
- **International Federation of Red Cross and Red Crescent Societies (IFRC) (2020):** Interim Guidance for COVID-19 Prevention and Control in Schools. March 2020 (<https://uni.cf/2Zi58VC> accessed 04 September 2020).
 - **Kasemy Z., Bahbah W., Zewain S., Haggag M., Alkalash S., Zahran E. & Desouky D., (2020):** Knowledge, Attitude and Practice toward COVID-19 among Egyptians, *Journal of Epidemiology and Global Health* 10(4): 378–385.
 - **Khalaf F., Qayed M., Ibrahim H., Wasfi E. & Mohammed A., (2015):** Screening of Assiut Employees for Glaucoma as basis for Educational program; Thesis as a part of fulfillment for Doctoral degree, Faculty of nursing, Assiut university, Assiut scientific nursing journal, 5(3) :11-17.
 - **Koo J., (2020):** Interventions to mitigate early spread of SARS-CoV-2 in Singapore: a modeling study. *Lancet Infect.* 20 (6): p678-688.
 - **Lee J., (2020):** Reflections Features Mental health effects of school closures during COVID-19. *The Lancet. Child & Adolescent Health* 4(6):42.
 - **Levinson M., Cevik M. & Lipsitch M., (2020):** Reopening Primary Schools during the Pandemic. *N Engl J Med* 2020;383:981-985 DOI: 10.1056/NEJMms2024920.
 - **Ngwewondo A., Nkengazong L., Ambe L., Ebogo J., Mba F. & Goni H., (2020):** Knowledge, attitudes, practices of/towards COVID 19 preventive measures and symptoms: A cross sectional study during the exponential rise of the outbreak in Cameroon14 (9).
 - **Pearson C., Schalk C. & Foss A., (2020):** Projection of early spread of COVID-19 in Africa. *Euro surveillance*, 25 (18). pp. 19-24. ISSN 1560-7917 DOI: <https://doi.org/10.2807/1560-7917.ES.2020.25.18.2000543>
 - **Sahu K., Mishra A., Lal A. & Sahu S., (2020):** India fights back: COVID-19 pandemic. *Heart Lung* ;49 (5): 446–448.
 - **Sim M., (2020):** The COVID-19 pandemic: major risks to healthcare and other workers on the front line. *Occup Environ Med.* 2020; 77: P.p. 281–282.
 - **Singh A. & Ahuja R., (2020):** Knowledge, Attitude, and Practice of General Public Towards COVID-19 in India: An Online Cross-Sectional Study, *International Journal of Innovative Research in Science, Engineering and Technology*;9(6).5005:5012, available at DOI:10.15680/IJRSET.2020.0906009.
 - **Skinner C. (2017):** Comments on “Sample survey theory and methods: Past, present and future directions” by W.A. Fuller & J.N.K Rao. *Surv. Methodol.*, 43, 179–181.
 - **Solliman A., Amin O. & Hoda M., (2013):** Ileal Perforation due to Typhoid fever- Review of operative management and outcome in an urban center in Nigeria. *International Journal of surgery*, 11(3): 218-222.
 - **Spector P., (1992):** Summated Rating Scale Construction: An Introduction. Newbury Park, CA: Available on line at <http://dx.doi.org/10.4135/9781412986038>.
 - **United Nations Children's Emergency Fund (UNICEF), (2021):** Classroom precautions during COVID-19, tips for teachers to protect, themselves and their students. Available at <https://www.unicef.org/coronavirus/teacher-tips-classroom-precautions-covid-19>.
 - **United Nations Educational, Scientific and Cultural Organization, (UNESCO), (2020):** Considerations for school-related public health measures in the context of COVID-19, Annex to Considerations in adjusting public health and social measures in the context of COVID-19, <https://unesdoc.unesco.org/search/N-EXPLORE-0068d88b-d5d6-4041-853c-5aaf66f26966>
 - **Vodicar P., Valencak A. & Zupan B., (2020):** Low prevalence of active COVID-19 in Slovenia: a nationwide population study of a probability-based sample. *Clin Microbial Infect.* 26(11):1514-1519.
 - **Walker P., Whittaker C. & Watson O., (2020):** The Global Impact of COVID-19 and Strategies for Mitigation and Suppression, Vol 369: 413-422.
 - **World Health Organization (2020_b):** Considerations for school-related public health measures in the context of COVID-19: annex to considerations in adjusting public health and social measures in the context of COVID-19, 10 May 2020. World Health Organization. (<https://apps.who.int/iris/handle/10665/332052> accessed 04 September 2020).
 - **World Health Organization (2020_c):** "Advice for the public on COVID19 available at 2020 <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public>.
 - **World Health Organization(2020_a):** Basic protective measures against the new coronavirus <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public>.
 - **Zhong B., Luo W., Li H., Zhang Q., Liu X., & Li W., (2020):** Knowledge, attitudes and practices towards COVID- 19 among Chinese residents during the rapid rise period of the COVID-19 outbreak: a quick online cross-sectional survey. *Int J Biol Sci.* 2020; volume (16), P.p.1745–1752.