



Knowledge, Attitude, and Practices Regarding Preventive Measures of COVID-19 Pandemic during Ramadan 2020 and Quarantine in Some Egyptian Governorates

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Abstract

BACKGROUND: The coronavirus disease 2019 (COVID-19) is a global crisis. The month of Ramadan has coincided with the COVID-19 crisis in 2020.

AIM: The aim of this study is to investigate knowledge, attitude, and practices (KAP) toward the preventive measures during Ramadan 2020 and quarantine, among the Egyptian population.

METHODS: This cross-sectional study is conducted among Egyptians ≥ 15 years of age. A convenience sample of 1150 responders is taken, over the period of the month of Ramadan 2020. An online self-administrated questionnaire is used and shared through social networks. KAP toward preventive measures for COVID-19 during Ramadan are assessed.

RESULTS: Results show that mean scores of KAP are higher among participants >20 years, mean \pm SD (3 ± 1.1 , 5.6 ± 1.4 , and 11.2 ± 2.6 , respectively). A significant difference is found between KAP scores and age with p-values (0.012, 0.002, and 0.000, respectively). Furthermore, there is a significant difference between practices score and gender ($p = 0.010$). Greater Cairo has the highest KAP mean scores, in comparison with other regions, mean \pm SD (3.3 ± 1 , 5.8 ± 1.2 , and 11.6 ± 2.5 , respectively). A significant difference is recorded between urban and rural areas, regarding KAP with p-value (0.000, 0.050, and 0.000, respectively).

CONCLUSION: In conclusion, low KAP scores are recorded among participants below the age of 20, and in rural areas and regions outside Greater Cairo. Low practices are associated more with males than females. The present study recommends raising awareness through the use of mass media, and health education programs that are to be directed to male members of the population, people under 20 years old, and to people residing in rural areas and in regions outside Greater Cairo, such as Upper and Lower Egypt, and border regions.

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Introduction

Coronavirus disease (COVID-19) is a global emergency. The disease was caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). COVID-19 was declared a pandemic disease by the World Health Organization (WHO) on January 31, 2020 [1], [2]. The spectrum of symptoms ranges from the symptoms of a mild common cold to a critically fatal respiratory pneumonia [3]. All the people are at risk of infection [4].

Egypt was among the first countries to take preventive safety measures against the coronavirus. Awareness campaigns and statements on staying home, personal hygiene, frequent hand washing, social distancing, gathering avoidance, and the use of respiratory protection masks were released [5].

Fasting during the holy month of Ramadan is one of the five pillars of Islam [6]. In Muslim communities, the holy month of Ramadan is characterized by

numerous social and behavioral changes [7]. It is not allowed for healthy adults to eat foods or drink liquids from sunrise to sunset [8].

The 2020 Ramadan had coincided with the COVID-19 crisis. Muslim families value social and religious gatherings. After sunset during Iftar or before dawn during Suhoor, friends and families meet each other. At mosques, Muslims gather for longer prayers [9]. Egypt and various Muslim countries, such as the United Arab Emirates, Saudi Arabia, and Jordan, imposed preventive measures. The Egyptian government extended the curfew, banned the performance of prayers inside mosques, and advised citizens to avoid large gatherings at both Suhoor or Iftar meals.

Ramadan 2020 started on April 23 and ended on May 23, 2020. On the first day of Ramadan, the Egyptian Ministry of Health had reported that the total number of positive COVID-19 cases in Egypt was 3891, the total deaths were 287, and the total number of recovered patients was 1004. On April 30, 2020, the Ministry reported that the total number of positive

COVID-19 cases was 5537, the total deaths were 392, and the total number of recovered patients was 1381. On May 7, the Ministry reported that the total number of positive COVID-19 cases was 7981, the total deaths were 482, and the total number of recovered patients was 1887. On May 14, the Ministry reported that the total number of positive COVID-19 cases was 10,829, the total deaths were 571, and the total number of recovered patients was 2626. A total of 16,513 positive COVID-19 cases was reported on the last day of Ramadan, the total deaths were 735, and the total number of recovered patients was 4628. Thus, the increase of positive COVID-19 cases in Ramadan was at an average of 5% [10].

Nearly, one-third of the world's population is Muslim (1.9 billion in more than 180 countries) so the situation of pandemic in Ramadan must be considered [11].

The aim of the present study is to investigate knowledge, attitude, and practices (KAP) toward preventive measures among the Egyptian population during Ramadan as social and religious gatherings are important for Muslim families during the holy month of Ramadan and this may interfere with their KAP toward the preventive measures for coronavirus.

Methods

Study design and subjects

This descriptive and cross-sectional study was carried out among Egyptians ≥ 15 years, during the month of Ramadan, which started on April 23 and ended on May 23, 2020. The study was carried out through links on social networks, such as Facebook and WhatsApp, since it was unfeasible to conduct personal interviews during this period as a result of the quarantine measures.

Sample size

Sample size was calculated using the statistical program of the openepi version. The sample size was estimated according to the suggested prevalence of 50%, with 5% acceptable margin of error and 95% confidence level. The estimated sample size is 384, after adjustment for non-response, the sample size was increased to 461.

Sampling technique

A convenience sample of 1150 responders was taken, over the period of Ramadan. All responders who agreed to complete the questionnaire were included in the study.

Study tools

A reliable pre-tested online self-administrated questionnaire was developed to collect the data. Questionnaires were initially designed in the English language, then translated into Arabic, which is the Egyptians' native language. They were checked for clarity, reliability, and acceptance through a pilot test. Questionnaires were shared through Google Forms through social networks, such as Facebook and WhatsApp. The questionnaires were shared with different groups, including NGOs, and groups of students at Cairo University.

The questionnaire was divided into four parts. Questions were designed and modified according to the WHO safe practices during Ramadan [9], and in light of the Egyptian traditions during Ramadan. The first part covered the sociodemographic data, such as age, gender, region, place of residence, occupation, and work affected by lockdown hours, as well as individual or family income affected by lockdown hours. The second part assessed the knowledge of the Egyptian population of preventive measures of COVID-19 during Ramadan and quarantine. It included six questions, such as the risk of spreading the virus through crowding; the importance of closing mosques during Ramadan; and the importance of adapting to the new health situation to prevent the virus from spreading; the government's efforts to limit the spread of the coronavirus during Ramadan; and the best measures taken to prevent infection from spreading further. The correct answers were assigned 1 point, while the incorrect answers were assigned 0 points. The overall knowledge score ranged from 1 to 6.

The second part of the questionnaire assessed the attitude of the Egyptian population toward preventive measures for COVID-19. It included 10 questions, such as: Whether participants would sacrifice some money to protect themselves from the virus by continuing to buy masks and alcohol, whether they would avoid traffic congestion; whether they would consider not fasting, assuming it would reduce their chances of catching the virus; whether using the Internet to have group conversations with family and relatives would be a good option to obviate family gatherings, especially during Ramadan; whether they would buy Eid clothes, in light of the spread of the coronavirus; whether they would consider it inevitable to keep children in their company when visiting the clothing stores to buy Eid clothes; and whether they had thought about making trips to spend the Eid, under those circumstances. The attitude of each subject, and the correct answers were assigned 1 point, while the incorrect answers were assigned zero points. The overall attitude score ranged from 0 to 10.

The third part assessed the practice of the Egyptian population toward COVID-19 preventive measures. It included 17 questions on safety practices, such as using 70% alcohol for sterilization; taking preventive measures during gatherings, such as

wearing masks, and ensuring the physical social distancing; following the decision regarding location of prayers after shutting down the mosques; whether they educated others about the danger of the coronavirus; whether they put off their purchase in case the shop frequented was crowded; whether they took preventive measures in markets; whether they dealt with purchases from the supermarket in the proper way; and whether they would buy cakes and biscuits, even in crowded places. The correct answers were assigned 1 point, while the incorrect answers were assigned zero points. The overall practice score ranged from 0 to 17.

Data management

To be statistically analyzed, pre-coded data were entered into the Statistical Package for the Social Science Software program, version 24 (SPSS v.24). For qualitative variables, frequency and percentage were used to summarize the data. For qualitative variables, the Chi-square test was used to assess statistical differences between groups. To find predictors of dependent variables, a backward step-wise linear regression model was used.

Ethical considerations

Respondents' confidentiality was ensured. Only responders who agreed to participate and complete the online questionnaire were included in the study. According to the revised Helsinki Declaration of Biomedical Ethics, data confidentiality was preserved [12].

Results

Nearly three quarters of the participants were in the age group between 21 and 30, by 73.1%. The

Table 1: The sociodemographic characteristics of the participants in the study

Sociodemographic characteristics	Description (n = 1155)
Age group	
15–20	226 (19.6)
21–30	823 (71.3)
> 30	106 (9.2)
Marital status	
Single	931 (80.6)
Married	224 (19.4)
Gender	
Male	193 (16.7)
Female	962 (83.3)
Region	
Greater Cairo	167 (14.5)
Lower Egypt	903 (78.2)
Upper Egypt	46 (4)
Border Regions	39 (3.4)
Place of residence	
Urban	622 (53.9)
Rural	365 (31.6)
Central	168 (14.5)
Occupation	
Student	749 (64.8)
Governmental	173 (15)
Private	138 (11.9)
Freelancer	29 (2.5)
Other	66 (5.7)

majority of the participants were single at 80.6% and female at 83.3% (Table 1). More than three quarters were from Lower Egypt at 78.2%, while 14.5% were from Greater Cairo. Nearly half of the participants were from urban areas by 53.9% (Table 1). Furthermore, two-thirds were students by 64.8%, while 15% of the participants were governmental employees, 11.9% worked in the private sector, and 2.5% were freelancers. For nearly half of the participants at 48.3%, lockdown hours affected their work. The income of 59.3% of the participants was affected by lockdown hours.

Mean scores of KAP are higher among participants >20 years, mean \pm SD (3 ± 1.1 , 5.6 ± 1.4 , and 11.2 ± 2.6 , respectively), a significant difference was found between KAP scores and age with p-values (0.012, 0.002, and 0.000, respectively). No significant difference was recorded between gender and knowledge and attitude scores, although there was a significant difference with practices score ($p = 0.010$) (Table 2).

Table 2: Comparisons of knowledge, attitude, and practices scores for the basic characteristics of the studied participants

Basic characteristics	Knowledge score	p	Attitude score	p	Practice score	p
Age						
20 or less	2.8 ± 1.1	0.012	5.2 ± 1.5	0.002	10.3 ± 2.7	0.000
> 20	3 ± 1.1		5.6 ± 1.4		11.2 ± 2.6	
Marital status						
Single	3 ± 1.1	0.121	5.5 ± 1.4	0.346	10.8 ± 2.6	0.000
Married	3.1 ± 1.1		5.6 ± 1.2		11.9 ± 2.5	
Gender						
Male	2.9 ± 1.2	0.511	5.3 ± 1.5	0.084	10.6 ± 2.7	0.010
Female	3 ± 1.1		5.5 ± 1.4		11.1 ± 2.6	
Greater Cairo						
Yes	3.3 ± 1	0.001	5.8 ± 1.2	0.007	11.6 ± 2.5	0.004
No	2.9 ± 1.1		5.4 ± 1.4		10.9 ± 2.7	
Lower Egypt						
Yes	2.9 ± 1.1	0.000	5.4 ± 1.4	0.016	10.9 ± 2.7	0.000
No	3.2 ± 1		5.7 ± 1.3		11.6 ± 2.5	
Urban residence						
Yes	3.1 ± 1.1	0.000	5.6 ± 1.3	0.050	11.4 ± 2.6	0.000
No	2.9 ± 1.1		5.4 ± 1.5		10.7 ± 2.7	
Employment						
Yes	3.1 ± 1.1	0.009	5.6 ± 1.2	0.023	11.7 ± 2.5	0.000
No	2.9 ± 1.1		5.4 ± 1.4		10.7 ± 2.6	

Greater Cairo had the highest KAP mean scores of 3.3 ± 1 , 5.8 ± 1.2 , and 11.6 ± 2.5 , with a significant difference with other areas, at 0.001, 0.007, and 0.004, respectively. The same was found in urban areas with a significant difference of 0.000, 0.050, and 0.000, respectively.

With regard to employment, participants who had jobs showed more KAP mean scores with a significant difference of 0.009, 0.023, and 0.000, respectively. There was a significant difference between work affected during lockdown hours and KAP with a significant difference of 0.001, 0.011, and 0.021, respectively. No significant difference was recorded between income and attitude, although there was a significant difference with knowledge and practices of 0.008 and 0.021, respectively.

Table 3: Predictors of knowledge score (backward step-wise linear regression model)

Final step	Beta	95% CI of Beta	p
5			
Age (> 20 vs. < 20)	0.163	0.005–0.320	0.043
Greater Cairo	0.204	0.020–0.388	0.030
Urban residence	0.192	0.062–0.321	0.004
Work affected by lockdown hours	-0.204	-0.344–0.063	0.004

Age, Great Cairo residence and work affected by lockdown hours were significant predictors for knowledge with p- values (0.043, 0.030, 0.004 respectively) and attitude of the studied participants with p- values (0.002,0.006,0.023 respectively) (Table 3 and 4).

Table 4: Predictors of attitude score (backward step-wise linear regression model)

Final step	Beta	95% CI of Beta	p
6			
Age (> 20 vs. < 20)	0.311	0.112–0.510	0.002
Greater Cairo	0.315	0.089–0.542	0.006
Work affected by lockdown hours	-0.206	-0.384–-0.028	0.023

CI: Confidence interval

While Age, gender, urban residence and employment were significant predictors for practices of the studied participants with p- values (0.005,0.025,0.010,0.000 respectively) (Table 5).

Table 5: Predictors of practices score (backward step-wise linear regression model)

Final step	Beta	95% CI of Beta	p
5			
Age (> 20 vs. < 20)	0.580	0.179–0.981	0.005
Gender (female vs. male)	0.460	0.059–0.861	0.025
Urban residence	0.410	0.097–0.723	0.010
Employment	0.795	0.448–1.141	0.000

Discussion

The COVID-19 pandemics spread rapidly across the whole world, including Egypt, which is one of the biggest countries in the Middle East, with more than 100 million citizens. KAP toward the disease have great impact on the adherence of the public to both preventive and control measures, particularly during the month of Ramadan. Assessment of sociodemographic factors and their relation with KAP is important for public health policymakers, to identify the target group for COVID-19 preventive measures.

In this study, mean KAP scores are higher among participants >20 years at (3 ± 1.1 , 5.6 ± 1.4 , and 11.2 ± 2.6) with a significant difference between age, and KAP scores of 0.012, 0.002, and 0.000, respectively. This coincides with the study conducted in Cameron, demonstrating that age >20 years is associated with high knowledge and attitude scores [13].

Furthermore, no significant difference is recorded between gender and scores of knowledge and attitude, although there is a significant difference with practices score ($p = 0.010$). Greater Cairo has the highest KAP mean scores of 3.3 ± 1 , 5.8 ± 1.2 , and 11.6 ± 2.5 , with a significant difference with other areas at 0.001, 0.007, and 0.004, respectively. The same is found in urban areas with a significant difference of 0.000, 0.050, and 0.000, respectively. This coincides with the literature analysis of the norms, beliefs, and practices relevant to the prevention of COVID-19 in the Middle East and North Africa. Male gender, lower educational levels, age – both older and younger,

and rural residence are all associated with low compliance with relevant public health measures across populations. It is evident that the usual social and professional activities of the male members of the population have led them to leave the house and socialize more frequently, which has implications on social distancing and quarantine. Besides, studies have generally found that men are more prone to taking risks, and less likely to adopt preventive behaviors, when compared to their female counterparts [14].

This, also, coincides with the study on knowledge, attitudes, and practices toward COVID-19 at Menoufia Governorate, Egypt, concluding that there is a significant difference in the knowledge of the studied group with regard to age, and residence. Positive attitude is considerably higher among the age group 18–40 years old, as well as among the urban populations, people with high educational levels and high SES, and those who work as professionals ($p < 0.001$). Higher mean practice scores are found in the age group 18–40, female participants, urban populations, people with high educational levels and high SES, and those who work as professionals ($p < 0.001$) [15].

The final step of step-wise linear regression shows that the age group, region (Greater Cairo), urban residence, and work affected by lockdown hours are the significant predictors for knowledge toward preventive measures. In addition, it reveals that age group, region (Greater Cairo), and work affected by lockdown hours are the significant predictors for attitude toward preventive measures. Moreover, age group, gender, urban residence, and employment status are the significant predictors for preventive practices.

According to Erfani *et al.* [16]-who carried out a population-based survey in Iran, a considerable correlation has been identified between the female gender, higher age, and higher education, and KAP. Based on multiple linear regression analyzes, male gender and lower educational levels are associated with lower knowledge scores. The results, also, coincide with a study on the Egyptians' knowledge, perception, and attitude toward the novel coronavirus disease (COVID-19), concluding that participants have good general knowledge of disease prevention, and a positive attitude toward measures for prevention [17].

Regarding employment, participants who have jobs show higher KAP mean scores with a significant difference of 0.009, 0.023, and 0.000, respectively. There is a significant difference between work affected during lockdown hours and KAP mean scores of 0.001, 0.011, and 0.021, respectively. No significant difference is recorded between income and attitude, where as there is a significant difference with knowledge and practices at 0.008 and 0.021, respectively. This coincides with a cross-sectional study conducted on 784 persons from three villages in Talkha district, Egypt, revealing that good knowledge, positive attitude, and good practices are reported by 62.8%, 48.9%, and 58.8% of

participants, respectively. Good knowledge is noticeably higher among the more educated participants, as well as the students and the employed participants [18].

Conclusion

Low KAP scores were recorded among participants below the age of 20, and in rural areas and regions outside Greater Cairo. No significant difference was found between gender and scores of knowledge and attitude, where as a significant difference with practices score was recorded. In addition, there was a significant difference between work affected during lockdown hours and KAP mean scores. No significant difference was recorded between income and attitude, although there was a significant difference with knowledge and practices.

Recommendations

The study recommends an increase in awareness, through the use of mass media, as well as health education activities and programs. These awareness initiatives should target male members of the population, people below 20 years of age, people residing in rural areas and in regions outside Greater Cairo, such as Upper and Lower Egypt, and border regions.

Limitations of the Study

It was difficult to conduct face-to-face interviews due to quarantine measures.

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References

- Bai L, Yang D, Wang X, Tong L, Zhu X, Zhong N, *et al.* Chinese experts' consensus on the Internet of things-aided diagnosis and treatment of coronavirus disease 2019(COVID-19). *Clin eHealth.* 2020;3:7-15.
- Shigemura J, Ursano RJ, Morganstein JC, Kurosawa M, Benedek DM. Public responses to the novel 2019 coronavirus (2019-nCoV) in Japan: Mental health consequences and target populations. *Psychiatry Clin Neurosci.* 2020;74(4):281. <https://doi.org/10.1111/pcn.12988>
PMid:32034840
- Guo YR, Cao QD, Hong ZS, Tan YY, Chen SD, Jin HJ, *et al.* The origin, transmission and clinical therapies on coronavirus disease 2019 (COVID-19) outbreak-an update on the status. *Mil Med Res.* 2020;7(1):1-10. <https://doi.org/10.1186/s40779-020-00240-0>
PMid:32169119
- Jin YH, Cai L, Cheng ZS, Cheng H, Deng T, Fan YP, *et al.* A rapid advice guideline for the diagnosis and treatment of 2019 novel coronavirus (2019-nCoV) infected pneumonia (standard version). *Mil Med Res.* 2020;7(1):1-23. <https://doi.org/10.1186/s40779-020-0233-6>
PMid:32029004
- Bahlol M, Dewey RS. Pandemic preparedness of community pharmacies for COVID-19. *Res Soc Adm Pharm.* 2021;17(1):1888-96. <https://doi.org/10.1016/j.sapharm.2020.05.009>
PMid:32417070
- The Five Pillars of Islam, On Islam: Muslims and the Media. 2018. p. 147. Available from: <https://scholar.google.com/scholar?q=The%20Five%20Pillars%20of%20Islam> [Last accessed on 2021 May 5].
- Fasting during Ramadan. In: Wikipedia; 2020. Available from: https://www.en.wikipedia.org/w/index.php?title=Fasting_during_Ramadan&oldid=951881632 [Last accessed on 2021 April 10].
- Moghadam MT, Taati B, Ardakani SM, Suzuki K. Ramadan fasting during the COVID-19 pandemic; observance of health, nutrition and exercise criteria for improving the immune system. *Front Nutr.* 2021;7:1-10. <https://doi.org/10.3389/fnut.2020.570235>
PMid:33521030
- World Health Organization. Safe Ramadan Practices in the Context of the COVID-19. Geneva: World Health Organization; 2020. Available form: <http://www.apps.who.int> [Last accessed on 2020 Apr 20].
- El Desouky ED. Prediction of the epidemic peak of Covid19 in Egypt, 2020. *medRxiv.* 2020;2020:20086751. <https://doi.org/10.1101/2020.04.30.20086751>
- Ali SN, Hanif W, Patel K, Khunti K. Ramadan and COVID-19 vaccine hesitancy-a call for action. *Lancet.* 2021;397:1443-4. [https://doi.org/10.1016/S0140-6736\(21\)00779-0](https://doi.org/10.1016/S0140-6736(21)00779-0)
PMid:33838109
- World Medical Association. The Declaration of Helsinki; 2008. Available from: <http://www.wma.net/en/30publications/10policies/b3/index.html> [Last accessed on 2011 Oct 07].
- Ngwewondo A, Nkengazong L, Ambe LA, Ebogo JT, Mba FM, Goni HO, *et al.* Knowledge, attitudes, and practices of/towards COVID-19, preventive measures and symptoms. A cross-sectional study during the exponential rise of the outbreak in Cameron. *PLoS Negl Trop Dis.* 2020;14(9):e0008700. <http://doi.org/10.1371/journal.pntd.0008700>
PMid:32886678
- Butler N, Tulloch O, Karam S. Norms, Beliefs, and Practices Relevant to the Prevention of COVID-19 in the Middle East and North Africa: A Literature Analysis. Amman, Jordan: UNICEF Middle East and North Africa Region Office; 2021.
- Gabra HM, Seif AS, Allam HK. Knowledge, attitudes, and practices toward COVID-19, at Menoufia governorate, Egypt. *Kasr Al Ainy Med J.* 2020;26(1):21-6.
- Erfani A, Shahriarirad R, Ranjbar K, Mirahmadizadeh A, Moghadami M. Knowledge, attitude and practice toward the

- novel coronavirus (COVID-19) outbreak: A population-based survey in Iran. *Bull World Health Organ.* 2020;10-2471. Available from: https://www.who.int/bulletin/online_first/20-256651.pdf [Last accessed on 2021 Jul 07].
17. Abdelhafiz AS, Mohammed Z, Ibrahim ME, Ziady HH, Alorabi M, Ayyad M, *et al.* Knowledge, perception, and attitude of the Egyptians towards the novel coronavirus disease (COVID-19). *J Commun Health.* 2020;45(5):881-890. <http://doi.org/10.1007/s10900-020-00827-7>
PMid:32318986
18. El-Gilany AH, El-Bastawesy S, Ali SI. Knowledge, attitude, and practices (KAP) of rural population about COVID-19: A community-based study in Talkha District, Egypt. *Int J Novel Res Healthc Nurs.* 2020;7(2):525-32