Consequences of COVID 19 Pandemic; Fear among General Population, A Cross Sectional Study from Egypt

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Abstract

Problem considered: The pandemic spread of COVID 19 seems to affect every part of daily life, having potential negative effects on the mental health. The fear of COVID-19 might produce elevated levels of stress and anxiety, or exacerbate pre-existing mental health disorders.

Aims: To assess the level of fear among people and to identify different aspects and predictors of fear and anxiety related to COVID-19.

Methods: This was a cross-sectional online survey. A self-administered questionnaire was used from the 22nd to 30th of June 2020 after reaching the peak of disease spread in Egypt at the middle of June.

Results: Four hundred and twenty-nine participants with mean age 28.67±5.07 years old have completed the survey. The percent of participants with high fear was 187(43.6%). The mean fear score was significantly higher in old age ≥ 60 years old than younger age groups. The fear score was also higher among participants having chronic disease, living in houses with ≤ 3 rooms (p<0.001). Increasing age, rural residence, married status and having children less than 12 years old were associated factors of fear among study participants with OR(95%CI): 1.038 (1.009-1.068), 3.150(1.239- 8.007), 2.4(1.07 - .5.34) respectively.

Conclusion: A moderate fear level was reported. Predictors of high fear level were old age, rural residence, being married and having children less than 2 years old. Adopting strategies to reduce the burden of the pandemic and its psychological health consequences should be considered.

Keywords: COVID-19; Fear- Anxiety; Mental Health

Introduction

COVID-19 is an infectious disease caused by the newly discovered coronavirus. Coronaviruses are known to cause respiratory infections ranging from the common cold to more severe diseases; this new virus and disease were unknown before the outbreak began in Wuhan, China, in December 2019. COVID-19 is considered a pandemic affecting many countries globally. There is evidence that COVID-19 spreads between people through direct contact or indirect through contaminated objects or surfaces and close contact with infected people via mouth and nose secretions. Aerosol transmission of COVID-19 was also reported, particularly in indoor locations where there is over crowdedness and inadequate ventilation [1].

The pandemic spread of COVID 19 seems to affect every part of daily life, led to prolonged social isolation, adverse economic effects and the potential negative effects of COVID-19 on the mental health of the population also reported. Recent research concludes evidence supporting the negative mental concerns of COVID-19. For example, studies reported elevated levels of stress, anxiety, and depression, among the Chinese population [2,3].

The fear of COVID-19 is one of factors that might produce elevated levels of stress and anxiety, specifically the fear of infection may exacerbate pre-existing mental health disorders or elicit extreme anxiety reactions [2,3].

Fear relates to a well-known but understood threat, whereas anxiety follows from an unknown, expected, or poorly defined threat. Fear and anxiety produce physical and mental responses to certain dangers. Excessive sweating, sleep disturbance, muscle tension, increased heart rate, and shortness of breath are the most significant physiological symptoms associated with a response fear and anxiety [4]. The aim of our study to assess the level of fear among people and to identify different aspect and predictors of fear and anxiety related to COVID-19.

Methods

Study design

A descriptive cross-sectional online study was implemented among group of participants in Fayoum Governorate, Egypt.

Study setting

Fayoum is one of 27 Governors in Egypt, located in the southwest of Cairo with a population of 3.848.708 million [5]. Data was collected from the 22nd to 30th of June 2020; this was actually the last week of imposing the partial lockdown as one of the preventive measures to achieve social distancing and reduce the spread of the disease. It was also just after reaching the peak of disease spread in Egypt at the middle of June [6]. The highest daily number of cases was 1774 reported at June 19th [7].

Study Subjects

A convenient sampling technique was used to select participants. Subjects 18 years old or more residing in Fayoum who did not have the disease were invited to participate.

The sample size was calculated using EpiCalc-2000 based on the following assumption: the proportion of fear 50% to obtain maximum size, level of confidence 95% and precision level 5% and design effect 1 to be 384.Then the sample size increased by10% to overcome non-response.

Study Tools

A self-administered questionnaire was used. It consists of three main parts; the first concerned with the basic data of study participants, the second asked about some factors that may alter the fear level and the third to assess the fear and anxiety level due to the COVID 19 pandemic. Basic data include age, gender, residence, education, occupation, marital status. The second part include questions about some factors that was supposed to affect the level of fear and anxiety from the disease like having children less than 12 years old, having a chronic disease, a parent with chronic disease, knowing someone who had the disease and what was the outcome of infection, having a first-degree relative working in health care and the number of rooms in their houses. The seven-item Fear of COVID-19 Scale (FCV-19S) developed by Ahorsu, *et al.* 2020 to assess the fear and anxiety level [8]. It is reliable and valid in assessing fear of COVID-19 among the general population and it also has robust psychometric properties. We used the validated Arabic version of FCV-19S developed in Saudi Arabia by Alyami, *et al.* 2020 [9]. A five-point Likert scale was used to record responses ranging from Strongly Disagree (1), Disagree (2), Neutral (3), Agree (4) and Strongly Agree (5). The minimum score for each item is 1, and the maximum is 5. A total score is calculated by adding up each item score (ranging from 7 to 35). Higher score implies greater fear of COVID-19.

Data Collection Process

Due to the partial lockdown in Egypt, we used the online data collection method. A Google form was created, and participants were invited to complete and submit it. The form link was shared by the researchers on Facebook and Whatsapp to all their friends and relatives. It was also shared with many Facebook groups and other social media platforms. All participants were encouraged to send the form link to as many as possible of their friends in order to reach the largest possible number of participants.

Ethical Consideration

The study protocol was approved by the ethical committee of the Faculty of Medicine, Fayoum University. We provided the participants with detailed information on the confidentiality and right to protect their identities, the background and purpose of the study, and the voluntariness of participation. Submitting the completed form was considered consent. Confidentiality of the study participants' identities was maintained throughout the study.

Statistical Analysis

After obtaining all the necessary data, gathered data was coded and checked for completeness and reasonability. Statistical analysis was performed using SPSS (Statistical Package for Social Sciences) Version 16 (IBM Corp. Released 2012. IBM SPSS Statistics for Windows, Version 21.0. Armonk, NY: IBM Corp). Simple descriptive analyses as means and standard deviations (SD) were considered for numerical data and frequency and percent for qualitative data. Overall mean score for the responses was calculated and compared based on demographic variables using t test for comparing two groups and analysis of variance (ANOVA) for three or more groups. Scores were categorized as low and high levels based on the mean, which was taken as a cut-off. The scores less than or equal to the mean were considered as low fear and scores equal to or above the mean as high fear. A comparison of low and high levels of fear and a multiple logistic regression analysis of levels of fear with demographic variables were conducted. $P < 0.05$ was considered statistically significant.

Results

Four hundred and twenty-nine participants have completed the survey. Table 1 showed the socio-demographic characteristics of the studied participants. Nearly three quarter of the participants (75.1%) were males. Their mean age was 29.8±11.7 years and ranged from 18 to 77 years old. Rural residence was represented by 30.3%. Near half percent 48% have completed university education.

About 21% have completed high school, and only 5.6% and 8.4% had primary and preparatory education. The majority (70.6%) of the study participants were working. Regarding Assessment of possible risk factors of fear; having children less than 12 years old, and having chronic disease or being in contact to a HCW were represented by 44.5%, 18.2% and 50.8% of study participants. Table 1

		N	%
Sex	Female	322	75.1
	Male	107	24.9
Residence	Rural	130	30.3
	Urban	299	69.7
Age (years)	≤20 years	75	17.5
	21-30	162	37.8
	31-40	130	30.3
	41-50	40	9.3
	51-60	13	3.0
	≥ 60	9	2.1
	Mean±SD	29.8±11.7	
Education	Primary	24	5.6
	preparatory	36	8.4
	High school	90	21.0
	University	206	48.0
	Higher studies	73	17.0
Working status	No	126	29.4
	yes	303	70.6
Marital status	Married	235	54.8
	Unmarried	194	45.2
Having children less than 12 years old	Yes	191	44.5
	No	238	55.5
Having co-morbidity	Yes	78	18.2
	No	351	81.8
Being in contact with an HCW	Yes	218	50.8
	No	211	49.2
Number of house rooms	≤ 3 rooms	320	74.6
	>3 rooms	109	25.4

*SD: Standard deviation; COVID-19: Coronavirus disease 2019, HCW: Healthcare Worker
Table 1: Basic characteristics of the study group

items	Strongly Disagree (1)		Disagree (2)		Neither Agree or Disagree (3)		Agree (4)		Strongly Agree (5)	
	N	%	N	%	N	%	N	%	N	%
Are you most afraid of coronavirus disease-19	63	14.7	88	20.5	93	21.7	109	25.4	76	17.7
Does it make you uncomfortable to think about coronavirus disease-19	63	14.7	67	15.6	55	12.8	144	33.6	100	23.3
Do your hands become clammy when you think about coronavirus disease-19	268	62.5	61	14.2	55	12.8	12	2.8	33	7.7
Are you afraid of losing your life because of coronavirus disease-19	166	38.7	70	16.3	60	14.0	57	13.3	76	17.7
When watching news and stories about coronavirus disease-19 on social media, do you become nervous or anxious	57	13.3	70	16.3	78	18.2	124	28.9	100	23.3
You cannot sleep because you are worrying about getting coronavirus disease-19	247	57.6	85	19.8	51	11.9	12	2.8	34	7.9
Your heart races or palpitates when you think about coronavirus disease-19	192	44.8	109	25.4	49	11.4	30	7.0	49	11.4

*Significant; COVID-19, coronavirus disease 2019
Table 2: Item distribution of responses among study participants

Table 2 showed the item wise distribution of responses to the questionnaire among study participants. Most of the responses were either agreeing or strongly agree to items 1, 2 and 5. On the other hand items 3, 4, 6 and 7 the most of responses were disagree or strongly disagree.

The mean fear score of participants was 18.1±7.5 ranged from 7 to 35. The percent of participants with high fear was 187(43.6%). The mean fear score was significantly higher in old age ≥ 60 years (28.67±5.07) than younger age groups. No difference in fear score between male and female participants. Fear score was higher in rural 20.4±8.9 than urban participants 17.1±6.56, p=<0.001. The level fear score was also higher among participants having chronic disease 22.05±8.89 than others without chronic disease 17.24±6.87, also the fear score was higher in participants living in houses with ≤ 3 rooms than others (p<0.001). No difference in fear score regarding other studies factors, Table 3.

		±Mean score	SD	p value
Sex	Male	18.08	7.87365	0.950
	Female	18.13	7.39491	
Age	≤20 years	18.56	9.05873	<0.001*
	21-30	16.70	6.68909	
	31-40	19.62	6.75299	
	41-50	15.28	6.50044	
	51-60	19.54	9.70923	
	≥ 60	28.67	5.07445	
Residence	Rural	20.44	8.92692	<0.001*
	Urban	17.10	6.56352	
Education	Primary	19.50	8.31447	0.819
	preparatory	18.17	10.61939	
	High school	18.27	8.06546	
	University	18.14	6.87881	
	Higher studies	17.38	6.46708	
Working status	No	18.71	8.52841	0.296
	yes	17.86	7.04043	
Marital status	Married	18.11	7.14080	0.998
	Unmarried	18.11	7.94851	
Having children less than 12 years old	Yes	18.07	6.77727	0.920
	No	18.15	8.06039	
Having co-morbidity	Yes	22.05	8.89316	<0.001*
	No	17.24	6.87810	
Number of house rooms	≤ 3 rooms	19.01	7.83029	<0.001*
	>3 rooms	15.49	5.73910	
Having affected persons with COVID-19 among friends or relatives	Yes	18.8650	8.50512	0.006*
	No	16.79	5.06450	
Results of COVID -19 disease	Having non-COVID-19 case	17.39	6.08693	<0.001*
	Recovery	17.75	8.40344	
	Death	30.63	4.57299	
Being in contact with a HCW	Yes	17.59	7.49956	0.153
	No	18.62	7.49782	

* Significant; ± maximum score=35; COVID-19, coronavirus disease 2019
Table 3: Mean Fear score by sociodemographic characteristics

Table 4 showed logistic regression analysis to identify predictors of fear perception of COVID-19 among participants. Increasing age with OR (95%CI); 1.038 (1.009-1.068), rural residence, OR (95%CI); 1.927(1.222 – 3.03), married status, OR (95%CI); 3.150(1.239- 8.007, having children less than 12 years old, OR (95%CI); 2.4(1.07 - .5.34) were associated factors of fear among study participants.

Predictors	P value	OR	95.0% C.I.OR
age	.010*	1.038	1.009-1.068
Gender (female Vs. male	0.185	1.372	.859 - 2.190
Residence(Urban vs, rural)	0.005*	1.927	1.222 – 3.03
Education level	0.761	.961	.745 - 1.240
Occupation (working vs. not working)	0.588	.834	.433 - 1.608
Marital status (married vs. unmarried)	0.016*	3.150	1.239- 8.007
Having children less than 12 years old (yes vs. No)	0.032*	2.4	1.07 - .5.34
Having chronic disease (yes Vs. no)	0.072	.604	.349 - 1.046
Room (more than 3 rooms vs. less than 3 rooms	0.128	.697	.438 - 1.110
Having affected persons with COVID-19 among friends or relatives (yes vs. no)	0.576	.886	.579 - 1.355
Constant	0.509	2.149	

*Significant; coronavirus disease 2019 (COVID-19); OR, odds ratio; 95% CI, 95% confidence interval.
Table 4: Predictors of Fear among study Participants, Logistic regression analysis

Discussion

The rapid spread of COVID 19 pandemic significantly impacted the psychological health of the population all over the globe. Fear, anxiety, depression and post-traumatic stress were widely reported psychological problems. The aim of our study is to assess the fear level among the general population in Fayoum, Egypt and to explore the different aspect and predictors of fear related to COVID 19.

Fear is a primary emotion definitive to our survival and self-defense but it can lead to choices or actions that are less precise or careful than that taken under normal circumstances (4). It is evidently one of the most common psychological consequences to pandemics. It diminishes population wellbeing, impacts their decision making and leads to change in their lifestyle and leads to more serious psychological implications (10). Several studies had reported the adverse psychological implication of spread of infectious diseases. In particular individuals exposed to the risk of infection during pandemics are at more risk to develop overwhelming fear (11-14). Regarding the fear level among our population our study revealed that the mean fear level was 18.1±7.5 and almost half 43.6% were experiencing higher level of fear. This is consistent with the Doshi *et al.*, 2020 in a study conducted in India that reported an overall mean score was 18.00 ± 5.68 and 45.2 % had higher fear level (15). On the other hand Broche-Pérez *et al.*, 2020 found higher fear level with a mean score 19.9±7.4 among his participants in Cuba (16). Regarding gender effect on fear level, our study revealed no significant difference between males and females (18.07± 7.9 and 18.1±7.4 respectively). This comes in line with Perz *et al.*, 2020 reported no gender difference (17), but in contrast to several studies revealed higher fear levels and even higher psychological impact in females [15-19].

The mortalities of COVID 19 are much higher in elderly and in people with chronic co morbidities due to declining in immunity and higher infection rates (20). So, high levels of fear of COVID-19 in those individuals might be considered as an expected finding. This may explain our results that revealed older participants had higher fear levels (28.6± 5.1) than younger participants (16.7 ±6.6). On contrast to, studies among Indian population that reported older participants had lower fear levels (15, 21). We also found elderly to be a predictive to high fear level unlike to Perz *et al.*, 2020 who reported age was not affecting the fear level (17). Consistent with Varshney *et al.*, 2020 and Bakioğlu *et al.*, 2020 we found participants having a chronic comorbidity had higher fear levels (22.1±8.9) than those not having chronic illness (17.2± 6.8) [21,22].

Fear of COVID 19 infection was reported in several studies with diverse perceived reasons for such feeling either due to fear of infecting their families, fear of isolation due to lockdown measures, fear of financial hardship or uncertainty [23,24]. Fear associated with the pandemic may be due to concerns related to health of loved ones and fear of separation from them that increases the psychological impact (25, 26). Consistently we also found being married and having children less than 12 years are predictive of high fear. This comes in line with Perz, *et al.* 2020 that found married respondent exhibiting more fear [17].

We found Participants having a first degree relative who had been infected had had higher fear levels (18.9 ±8.5) and the level of fear is approximately doubled (30.6±4.6) if the outcome was death. As reported by Khan, *et al.* 2020 [27] those who have suffered family deaths are also more likely to experience severe psychological stress. On the other hand Bakioğlu, *et al.* 2020 [22] found no difference in fear level in those had or had not a first degree relative suffered from the disease.

Not in line with, Bakioğlu, *et al.* 2020 [22] the place of residence of our participant was found significantly affecting the fear level. Living in rural areas was associated with higher fear levels (20.4 ±8.9) than living in urban counterparts (17.1±6.5) and living in houses with 3 or less rooms was associated with higher fear levels (19.0± 7.8) than living in houses with more than three rooms (15.5 ±5.7). Knowing the importance of social distancing and isolation of infected individuals in private rooms in order to prevent further spread of infection [23] can explain our finding. Also being with high education with access to social media platforms

can explain the results as more than two thirds of our participants had high education levels and all of them were users of social media who are supposed to have access to such information. Living in rural areas which we found a predictor to high fear level is also associated with habits and tradition that may interfere with the commitment to the precautionary preventive measures this may increase the fear level of the disease. This situation of social irresponsibility was reported as a mean concern that induces psychological stress [28].

Conclusion and recommendations

This study revealed that fear level among the participants was moderate with less than half had high fear level. Several factors were associated with high fear level. Predictors of high fear level were elderly, rural residence, being married and having children less than twelve years old. Adopting strategies to reduce the burden of the pandemic and its dramatic psychological health consequences should be considered as a public health priority. Targeting elderly and rural areas is recommended.

Limitations

This study used an online survey so it lacks representation of all population. Also accuracy and reliability of data cannot be guaranteed

Acknowledgment

References

1. World Health Organization (2020) Q&A on coronaviruses (COVID-19) WHO, Geneva.

2. Wang C, Pan R, Wan X, Tan Y, Xu L, et al. (2020) A longitudinal study on the mental health of general population during the COVID-19 epidemic in China. Brain, behavior, and immunity 87: 40-8.

3. Cao W, Fang Z, Hou G, Han M, Xu X, et al. (2020) The psychological impact of the COVID-19 epidemic on college students in China. Psychiatry research 287: 112934.

4. American Psychiatric Association (2013) Diagnostic and statistical manual of mental disorders. Edition F.

5. Egypt Statistics (2020) Population of Egypt. Cairo: Central Agency for Public Mobilization and Statistics; (2020)

6. Egypt to lift nationwide curfew on 27 June as part of phased reopening plan, retail hours permanently shortened. Enterprise.

7. Coronavirus Resource Center (2020) Johns Hopkins University of Medicine.

8. Ahorsu DK, Lin CY, Imani V, Saffari M, Griffiths MD, et al. (2020) The Fear of COVID-19 Scale: Development and Initial Validation. Int J mental health addiction 27: 1-9.

9. Alyami M, Henning M, Krägeloh CU, Alyami H (2020) Psychometric evaluation of the Arabic version of the Fear of COVID-19 Scale. Int J mental health addiction 16: 1-14.

10. Ren SY, Gao RD, Chen YL (2020) Fear can be more harmful than the severe acute respiratory syndrome coronavirus 2 in controlling the corona virus disease 2019 epidemic. World J clin case 8: 652-7.

11. McMahon SA, Ho LS, Brown H, Miller L, Ansumana R, et al. (2016) Healthcare providers on the frontlines: a qualitative investigation of the social and emotional impact of delivering health services during Sierra Leone's Ebola epidemic. Health Policy and Planning 31: 1232-9.

12. Usher K, Durkin J, Bhullar N (2020) The COVID-19 pandemic and mental health impacts. International Journal of Mental Health Nursing 29: 315-8.

13. Wang S, Wen X, Liu B, Dong Y, hu Cui M (2020) Psychological influence of Coronovirus disease 2019 (COVID-19) pandemic on the general public, medical workers and patients with mental disorders and its countermeasures. Psychosomatics 2020.

14. Jeong H, Woo H, Song YJ, Ki M, Min J, et al. (2016) Mental health status of people isolated due to Middle East Respiratory Syndrome. Epidemiology and Health 38: e2016048.

15. Doshi D, Karunakar P, Sukhabogi JR, Prasanna JS, Mahajan SV (2020) Assessing Coronavirus Fear in Indian Population Using the Fear of COVID-19 Scale. International Journal of Mental Health and Addiction 28: 1–9.

16. Broche-Pérez Y, Fernández-Fleites Z, Jiménez-Puig E, Fernández-Castillo E, Rodríguez-Martin BC (2020) Gender and Fear of COVID-19 in a Cuban Population Sample. International Journal of Mental Health and Addiction 12: 1-9.

17. Perz CA, Lang BA, Harrington R (2020) Validation of the Fear of COVID-19 Scale in a US College Sample. International Journal of Mental Health and Addiction 25:1-11.

18. Liu N, Zhang F, Wei C, Jia Y, Shang Z, et al. (2020) Prevalence and predictors of PTSS during COVID-19 outbreak in China hardest-hit areas: Gender differences matter. Psychiatry res 278: 112921.

19. Wang C, Pan R, Wan X, Tan Y, Xu L, et al. (2020) Immediate psychological responses and associated factors during the initial stage of the 2019 coronavirus disease (COVID-19) epidemic among the general population in China. Int J environ res public health 17: 1729.

20. Sanyaolu A, Okorie C, Marinkovic A, Patidar R, Younis K, et al. (2020) Comorbidity and its Impact on Patients with COVID-19. SN comprehensive clinical medicine 1-8.

21. Varshney M, Parel JT, Raizada N, Sarin SK (2020) Initial psychological impact of COVID-19 and its correlates in Indian Community: An online (FEEL-COVID) survey. Plos one 15: e0233874.

22. Bakioğlu F, Korkmaz O, Ercan H (2020) Fear of COVID-19 and Positivity: Mediating Role of Intolerance of Uncertainty, Depression, Anxiety, and Stress. International Journal of Mental Health and Addiction 1-14.

23. Wahed WY, Hefzy EM, Ahmed MI, Hamed NS (2020) Assessment of knowledge, attitudes, and perception of health care workers regarding COVID-19, a cross-sectional study from Egypt. Journal of community health 1-0.

24. Khan S, Siddique R, Li H, Ali A, Shereen MA, et al. (2020) Impact of coronavirus outbreak on psychological health. J Global Health 10: 010331.

25. Mertens G, Gerritsen L, Duijndam S, Salemink E, Engelhard IM (2020) Fear of the coronavirus (COVID-19): Predictors in an online study conducted in March 2020. J Anxiety Disorders 74:102258.

26. Lee M, You M (2020) Psychological and behavioral responses in South Korea during the early stages of coronavirus disease 2019 (COVID-19). Int J Environ Res Public Health 17: 2977.

27. Khan KS, Mamun MA, Griffiths MD, Ullah I (2020) The mental health impact of the COVID-19 pandemic across different cohorts. Int J Mental Health Addiction 1: 1-7.

28. Shahabi S, Sadati AK, Zarei L, Noroozi M, Tabrizi R, et al. (2020) The common concerns regarding the COVID-19 outbreak in Iran: Explored findings from a qualitative study. BMC Public Health 2020.