Geriatric vulnerability during COVID-19 pandemic

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ABSTRACT

Background: geriatric persons are more likely to be frail and have less resilience to psychological stressors.

Objectives: to determine elders vulnerability during COVID-19 pandemic.
Methods: Predefined questionnaires were fulfilled by 500 participants from various governorates in Egypt. The survey consists of four tools including: COVID-19 anxiety scale, COVID-19 Coping inventory (C-19C), The State-Trait Anxiety Inventory, State version (STAIS – Anxiety scale) and Coping Responses inventory (CRI). One way ANOVA test was conducted to compare the effects of age on different aspects of anxiety and coping related to COVID-19 pandemic followed by a Tukey post hoc test to make pair wise comparisons between group means.
Results: The elders group (aged ≥ 60 years) consisted of 24 males and 46 females. In comparison to younger age groups, older females had the highest scores in the COVID-19 anxiety scale (M= 61.565, p-value < 0.001) and the lowest scores in different subscales of both coping scales. This was shown in the coping responses inventory (M= 99.369, p <0.01) with seven out of its subscales and COVID-19 coping Inventory with three of its subscales. While, older males had the lowest scores in coping strategies inventory (M= 103.75, p-value <0.05) with all of its 16 subscales except for the emotional discharge subscale and in the COVID-19 coping Inventory (M= 8.10870, p-value .005) with 2 of its subscales. However, they didn't have statistically significant increase in COVID-19 anxiety pandemic.
Conclusion: COVID-19 pandemic has a major psychological impact on the society with the greatest burden among elders females.

Keywords: COVID-19, Anxiety, Coping, Elders, Psychological Impact.

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Introduction

Because of its rapid and high spread throughout the world, the World Health Organization (WHO) declared SARS-CoV-2 as a global pandemic on March 11, 2020. Over 132 million cases have been infected, with over 2 million deaths through out the world till January 2020 [1].

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In Egypt, COVID-19 confirmed infections reached 207 thousands with over 12 thousand COVID-19 related deaths. The majority of these deaths were older adults aged 60 or more, representing 60% of total deaths, despite of comprising 6.7% of the total population and 20% of total COVID-19 infection [2]. Similarly, 80% of COVID-19 related deaths occurred in elders population in the U.S. [3]. There is a continuous increase in the total number of older persons allover Egypt, according to the Central Agency for Public Mobilization and Statistics (CAPMAS), there is a gradual increase in elders population reaching 6.5 million people until January 2019 which makes them at the top priorities during the pandemic [4, 2.]

The Centers for Disease Control and Prevention (CDC) supported elders vulnerability to COVID-19 as 8 out of 10 deaths in the U.S. occurred in those ≥ 65 old because of poor health outcome and higher rates of hospitalization than younger population [5]. Additionally, Psychiatric or neurologic diseases are common among older adults, affecting more than 20% of those ≥ 65 old all over the world with high prevalence of dementia, depression and anxiety [6]. Loneliness due to social distancing and isolation increases the vulnerability for those who already have psychiatric disorders and elders persons are at the highest risk [7]. Older age, depression, and dementia are predisposing factors for suicide [8]. Social disconnection could induce a more pronounced negative spiral of worsening anxiety and/or depression among elders [9]. Special attention is needed for these patients as stressors related to the viral infection and isolation are major triggers of worsening age-associated conditions [10]. These data necessitate urgent therapeutic interventions for these vulnerable groups of patients. Accordingly, the study aims to determine geriatric vulnerability during COVID-19 pandemic.

Material And Methods

Patients and methods

This research was conducted on total sample of 500 Egyptian participants from various governorates. The most responsive of which were (Cairo, Gharbia & Giza). Age ranged from18 years to 86 years in which elders more than 60 years represented 14% of the sample using an online survey in a convenience sample. We used Google forms in addition to an offline survey for those who had no access to the online survey.

Ethics approval and consent to participate

Ethical approval for the study was granted by the Tanta University Ethical Committee, with approval Code 34394. Informed written consent was obtained from each participant to take part in the study.

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Tools

We applied four tools on all the participants. Two of them were used to assess coping; coping response inventory and the other one was "COVID-19 coping (C-19C)". While the third and fourth questionnaires were used to assess anxiety: "COVID-19 life events-Anxiety Inventory (C-19LAI)" and " The State-Trait Anxiety Inventory, State version (STAI S – Anxiety scale)". The coping response inventory (CRI) consists of eight subscales (logical analysis, positive reappraisal, seek guidance and support, take problem-solving action, cognitive avoidance, acceptance/resignation, seek alternative rewards, and emotional discharge). On the other hand, COVID-19 coping is a 50 items questionnaire which measures specific coping responses with COVID-19. It consists of four subscales (activities, behavioral phenomena, direct dealing with the problem, and positive reappraisal) [11].

Anxiety was assessed using (STAI S – Anxiety scale), we used the Arabic state trait anxiety inventory [12]. It is formed of 20 items which reflect feelings of apprehension, tension, nervousness, and worry. In addition to this, the last questionnaire was used to assess the COVID-19 anxiety in particular using "COVID-19 life events-Anxiety Inventory" [13]. It included 20 anxiety-related statements using a four-point rating scale ranging from “not at all” to “fairly often” regardless whether the problem or life event occurred.

Procedure and Data analysis

One way ANOVA analysis was conducted to compare the effects of age on different aspects of anxiety and coping related to COVID-19 pandemic. Then a Tukey post hoc test was conducted to make pairwise comparisons between group means. T test analysis of all variables for male and female age groups was used to compare the means of the two groups. All statistical analyses were performed with the SPSS, IBM Corp. Released 2017. IBM SPSS Statistics for Windows, Version 25.0. Armonk, NY: IBM Corp.

Results

Our sample included 500 individuals completed the questionnaire online, 182 were males and 318 were females. 260 participants (52%) were less than 40 years, 170 (34%) were 40-59 years and 70 participants (14%) were 60 and above. The elders group consisted of 24 males and 46 females. Our results showed the vulnerability of elders in different aspects related to anxiety and coping during COVID-19 pandemic. It showed significant statistical difference between different female age groups in COVID-19 anxiety scale in which female above 60 years got the highest scores denoting highest

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levels of anxiety with significant statistical difference among other age groups (M=61.565, p- value< 0.001) as shown in Table 1 and Table 2.

Table 1: Differences between age groups & Gender in variables of COVID-19 Life Events (C-19L), COVID-19 Anxiety (C-19A) and COVID-19 Coping inventory (C-19C) with its subscales.

Variables	*Age*	Female				Male			
		N	M	SD	F	N	M	SD	F
COVID-19 Life Events	*less than 40*	180	8.9667	3.84170	1.383	80	7.8500	3.55464	15.657**
	40-59	92	9.6196	3.92188		78	11.0256	3.53085	
	more than 60	46	8.5000	4.78772		24	9.3333	3.72613	
COVID-19 Anxiety	*less than 40*	180	51.2722	13.3462	22.710**	80	49.1625	14.8447	24.094**
	40-59	92	61.4457	13.8432		78	65.7179	14.5993	
	more than 60	46	61.5652	12.6397		24	58.2917	16.7578	
COVID-19 activities	*less than 40*	180	20.6389	3.47660	11.694**	80	20.0750	3.67948	1.147
	40-59	92	19.2283	3.93380		78	19.6154	3.89215	
	more than 60	46	17.9130	4.05422		24	18.7500	4.03517	
COVID-19 Behavioral phenomena	*less than 40*	180	26.9833	5.24428	7.371*	80	26.7750	4.40648	3.173
	40-59	92	28.4674	5.96225		78	28.8590	6.02317	
	more than 60	46	30.3913	6.33676		24	28.7917	6.86503	
COVID-19 Direct dealing with the problem	*less than 40*	180	27.3667	4.85188	10.818**	80	27.2500	4.64567	7.587*
	40-59	92	26.5543	5.78814		78	25.0641	4.86530	
	more than 60	46	23.3478	5.48216		24	23.1250	6.52295	
COVID-19 positive reappraisal	*less than 40*	180	52.6389	9.45839	10.254**	80	51.9125	7.74465	7.092*
	40-59	92	50.5761	11.3469		78	46.8846	9.54413	
	more than 60	46	45.0652	10.3503		24	46.6250	11.2590	
COVID-19 Coping	*less than 40*	180	127.6278	12.1774	12.738**	80	126.0125	10.7638	7.086*
	40-59	92	124.8261	14.7518		78	120.4231	11.8008	
	more than 60	46	116.7174	13.20717		24	117.2917	14.83380	

** Significant at 0.01 Level * Significant sat 0.05 Level

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Table 2: Bonferroni Multiple Comparisons between age groups in female

Dependent Variable	(I) Age	(J) Age	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Coping Responses inventory	less than 40	40-59	5.45531	2.66746	.125	-.9648-	11.8754
		more than 60	17.32488*	3.43861	.000	9.0487	25.6010
	40-59	less than 40	-5.45531-	2.66746	.125	-11.8754-	.9648
		more than 60	11.86957*	3.75846	.005	2.8236	20.9156
	more than 60	less than 40	-17.32488-*	3.43861	.000	-25.6010-	-9.0487-
		40-59	-11.86957-*	3.75846	.005	-20.9156-	-2.8236-
COVID-19 activities	less than 40	40-59	1.41063*	.47414	.009	.2694	2.5518
		more than 60	2.72585*	.61121	.000	1.2548	4.1969
	40-59	less than 40	-1.41063-*	.47414	.009	-2.5518-	-.2694-
		more than 60	1.31522	.66807	.150	-.2927-	2.9231
	more than 60	less than 40	-2.72585-*	.61121	.000	-4.1969-	-1.2548-
		40-59	-1.31522-	.66807	.150	-2.9231-	.2927
COVID-19 Behavioral phenomena	less than 40	40-59	-1.48406-	.72083	.121	-3.2190-	.2509
		more than 60	-3.40797-*	.92922	.001	-5.6444-	-1.1715-
	40-59	less than 40	1.48406	.72083	.121	-.2509-	3.2190
		more than 60	-1.92391-	1.01565	.177	-4.3684-	.5206
	more than 60	less than 40	3.40797*	.92922	.001	1.1715	5.6444
		40-59	1.92391	1.01565	.177	-.5206-	4.3684
COVID-19 Direct dealing with the problem	less than 40	40-59	.81232	.67023	.679	-.8008-	2.4255
		more than 60	4.01884*	.86399	.000	1.9394	6.0983
	40-59	less than 40	-.81232-	.67023	.679	-2.4255-	.8008
		more than 60	3.20652*	.94436	.002	.9336	5.4794
	more than 60	less than 40	-4.01884-*	.86399	.000	-6.0983-	-1.9394-
		40-59	-3.20652-*	.94436	.002	-5.4794-	-.9336-
COVID-19 positive reappraisal	less than 40	40-59	2.06280	1.30281	.343	-1.0728-	5.1984
		more than 60	7.57367*	1.67944	.000	3.5315	11.6158
	40-59	less than 40	-2.06280-	1.30281	.343	-5.1984-	1.0728
		more than 60	5.51087*	1.83566	.009	1.0927	9.9290
	more than 60	less than 40	-7.57367-*	1.67944	.000	-11.6158-	-3.5315-
		40-59	-5.51087-*	1.83566	.009	-9.9290-	-1.0927-
COVID-19 Coping	less than 40	40-59	2.80169	1.68107	.290	-1.2444-	6.8477
		more than 60	10.91039*	2.16705	.000	5.6946	16.1261
	40-59	less than 40	-2.80169-	1.68107	.290	-6.8477-	1.2444
		more than 60	8.10870*	2.36863	.002	2.4078	13.8096
	more than 60	less than 40	-10.91039-*	2.16705	.000	-16.1261-	-5.6946-
		40-59	-8.10870-*	2.36863	.002	-13.8096-	-2.4078-

*. The mean difference is significant at the 0.05 level.

Moreover, coping was affected in the elder group in both males and females with different aspects. As for females, results in this study showed that females above 60 years got the lowest scores in different subscales of both coping scales with significant statistical difference between the other female age groups. This was shown in the coping responses inventory (M=99.369, p <0.01) and seven out of its 8 subscales which are logical analysis (M=14.804, p <0.05), seeking support and information (M=13.282, p <0.01), problem solving (M=12.869, p <0.05), cognitive avoidance (M=13.804, p <0.01), acceptance (M=44.413, p <0.001), seeking alternative reward (M=11.260, p <0.05) and emotional discharge (M=10.913, p <0.05).

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Also, this was shown in COVID-19 coping inventory with three of its subscales which are activities related with COVID-19, direct dealing related with COVID-19 and positive reappraisal as shown in Table 3 and Table 2.

Table 3: Differences between age groups & Gender in variables of S-Anxiety and Coping Responses inventory (CRI) with its subscales.

Variables	*Age*	Female				Male			
		N	M	SD	F	N	M	SD	F
S-Anxiety	*less than 40*	180	50.0444	7.76888	1.783	80	48.7375	7.38926	.844
	40-59	92	51.4457	6.72924		78	49.8974	7.07582	
	more than 60	46	51.8913	6.97050		24	50.6250	7.48223	
Logical analysis	*less than 40*	180	16.5833	3.53099	4.123*	80	17.0500	3.61046	5.270*
	40-59	92	16.4565	4.08539		78	16.6282	4.24603	
	more than 60	46	14.8043	4.26156		24	14.0833	4.13802	
Positive reappraisal	*less than 40*	180	15.5167	3.39318	2.053	80	16.2375	3.49772	4.191*
	40-59	92	16.0217	3.45768		78	15.3462	3.88078	
	more than 60	46	14.7391	4.10114		24	13.7917	3.81050	
Seeking support and information	*less than 40*	180	15.9333	3.71107	10.412**	80	16.5250	3.63170	6.360*
	40-59	92	16.3043	4.04301		78	16.3590	4.63744	
	more than 60	46	13.2826	4.11319		24	13.2500	3.65049	
Taking problem solving action	*less than 40*	180	14.6444	3.75600	5.577*	80	15.3000	3.34286	10.255**
	40-59	92	13.7609	2.97377		78	13.4103	3.79143	
	more than 60	46	12.8696	3.10275		24	12.0000	3.36219	
Cognitive avoidance	*less than 40*	180	16.0778	3.14892	8.788**	80	16.6250	2.91819	8.530**
	40-59	92	15.4239	3.39759		78	15.0385	3.81195	
	more than 60	46	13.8043	3.68552		24	13.6250	3.76266	
Acceptance/ resignation	*less than 40*	180	47.0389	2.85666	15.158**	80	46.9625	2.66930	4.796*
	40-59	92	46.5109	3.02551		78	45.6538	2.64245	
	more than 60	46	44.4130	2.71274		24	45.7500	3.52938	
Seeking alternative rewards	*less than 40*	180	12.8778	2.99656	5.232*	80	13.5250	2.35987	8.627**
	40-59	92	12.4348	3.07883		78	12.1154	2.66766	
	more than 60	46	11.2609	3.12292		24	11.5000	3.00724	
Emotional discharge	*less than 40*	180	12.6889	2.92034	6.556*	80	12.7250	2.61435	2.662
	40-59	92	12.4022	3.02756		78	12.2821	2.86899	
	more than 60	46	10.9130	3.06830		24	11.2500	2.89302	
Coping Responses inventory	*less than 40*	180	116.694	18.9725	12.973**	80	117.025	16.7392	5.905*
	40-59	92	111.239	22.7873		78	108.230	21.2321	
	more than 60	46	99.3696	23.4628		24	103.750	25.2349	

** Significant at 0.01 Level * Significant sat 0.05 Level

In the male elders group, they also showed poor coping in both coping scales. Males more than 60 years got the lowest scores in coping strategies inventory (M=103.75, p value<0.05) and all of its subscales except for the emotional discharge with significant statistical difference between different age groups as shown in Table 4. This was also shown in the COVID-19 coping inventory with 2 of its subscales: positive reappraisal (M=46.625, p value, 0.05) and direct dealing related with COVID-

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19 (M= 23.125, p value<0.05). However, they didn`t show increase in COVID-19 anxiety when compared to other age groups.

Table 4: Bonferroni Multiple Comparisons between age groups in male

Dependent Variable	(I) Age	(J) Age	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Coping Responses inventory	less than 40	40-59	8.79423*	3.18013	.019	1.1088	16.4796
		more than 60	13.27500*	4.65131	.014	2.0342	24.5158
	40-59	less than 40	-8.79423-*	3.18013	.019	-16.4796-	-1.1088-
		more than 60	4.48077	4.66505	1.000	-6.7932-	15.7547
	more than 60	less than 40	-13.27500-*	4.65131	.014	-24.5158-	-2.0342-
		40-59	-4.48077-	4.66505	1.000	-15.7547-	6.7932
COVID-19 activities	less than 40	40-59	.45962	.60768	1.000	-1.0089-	1.9282
		more than 60	1.32500	.88880	.413	-.8229-	3.4729
	40-59	less than 40	-.45962-	.60768	1.000	-1.9282-	1.0089
		more than 60	.86538	.89142	.999	-1.2889-	3.0197
	more than 60	less than 40	-1.32500-	.88880	.413	-3.4729-	.8229
		40-59	-.86538-	.89142	.999	-3.0197-	1.2889
COVID-19 Behavioral phenomena	less than 40	40-59	-2.08397-	.87491	.055	-4.1984-	.0304
		more than 60	-2.01667-	1.27965	.350	-5.1092-	1.0759
	40-59	less than 40	2.08397	.87491	.055	-.0304-	4.1984
		more than 60	.06731	1.28343	1.000	-3.0344-	3.1690
	more than 60	less than 40	2.01667	1.27965	.350	-1.0759-	5.1092
		40-59	-.06731-	1.28343	1.000	-3.1690-	3.0344
COVID-19 Direct dealing with the problem	less than 40	40-59	2.18590*	.79840	.020	.2564	4.1154
		more than 60	4.12500*	1.16775	.002	1.3029	6.9471
	40-59	less than 40	-2.18590-*	.79840	.020	-4.1154-	-.2564-
		more than 60	1.93910	1.17120	.299	-.8913-	4.7695
	more than 60	less than 40	-4.12500-*	1.16775	.002	-6.9471-	-1.3029-
		40-59	-1.93910-	1.17120	.299	-4.7695-	.8913
COVID-19 positive reappraisal	less than 40	40-59	5.02788*	1.44044	.002	1.5468	8.5090
		more than 60	5.28750*	2.10681	.039	.1960	10.3790
	40-59	less than 40	-5.02788-*	1.44044	.002	-8.5090-	-1.5468-
		more than 60	.25962	2.11303	1.000	-4.8469-	5.3662
	more than 60	less than 40	-5.28750-*	2.10681	.039	-10.3790-	-.1960-
		40-59	-.25962-	2.11303	1.000	-5.3662-	4.8469
COVID-19 Coping	less than 40	40-59	5.58942*	1.87816	.010	1.0505	10.1283
		more than 60	8.72083*	2.74702	.005	2.0821	15.3595
	40-59	less than 40	-5.58942-*	1.87816	.010	-10.1283-	-1.0505-
		more than 60	3.13141	2.75513	.772	-3.5269-	9.7897
	more than 60	less than 40	-8.72083-*	2.74702	.005	-15.3595-	-2.0821-
		40-59	-3.13141-	2.75513	.772	-9.7897-	3.5269

*. The mean difference is significant at the 0.05 level.

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Discussion

The need for implementing specialized mental health sevice for elderly in Egypt is increasing dramatically. This requires precise vision for coping and mental disorders in this important sector especially during health crisis. COVID-19 pandemic has represented major crisis in Egypt and the whole world and has shown the highest health impact on the elders population. That`s why the identification of frail and vulnerable older persons represents a public health priority [14] elders population, due to various reasons such as low immunity, pre-existing co-morbidities are certainly predisposed to exhibit a high mortality rate. The heightened perception of morbidity and mortality risks in addition to social suppression during COVID-19 pandemic has increased the risk of mental and physical consequences. This has made older population more vulnerable to depression and anxiety [15].

In Egypt, Vulnerability of elders Even before the appearance of COVID-19 specially females was revealed in a study done in 2016 in Mansoura. This study showed that 44% of its elders sample showed depressive symptoms [16]. The regulations of lockdown presented a perfect violent storm for mental distress for older people [17] which developed high challenge for communities and governments [18]. Despite this fact, there are very limited studies that discussed vulnerability of elders in Egypt during the pandemic.

Our results showed that females in the elders age group showed significant higher anxiety related to COVID-19 with poor coping skills than other age groups. This was consistent with a review article which included 20.069 participants above 60 years from Asia, Europe, and America. It reported high anxiety prevalence ranging from 8.3%, 18.7% in the different studies included in the review identifying being a female as an important risk factor [19]. Also, it was consistent with another study done in the first COVID-19 wave in Netherlands which showed that the worry of getting infected with COVID-19 (p value = 0.03) was stronger in women ≥ 69 years when compared to other groups [20]. However, it wasn`t consistent with another study which showed that social vulnerability and the potential negative mental effects were higher in young adults compared to middle aged and older adults, and in males than females [21].

As for coping, our results showed significant decrease in coping skills in both males and females in the elders group than other age groups in both coping response inventory with many of its subscales such as, logical analysis and cognitive avoidance in addition to COVID-19 coping inventory. This reflected diminished use of adaptive coping strategies such as problem solving, seeking support and information, acceptance and logical analysis leading to difficulty in developing resilience.

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A cross sectional study done on 141 elders participants in U.S.A during the outbreak reported that higher resilience showed significant relation with more frequent use of acceptance, humor, and other adaptive coping strategies [22]. Also, another study done in India on 11 elders couples showed a resilience to COVID-19 phenomenon by using different forms of learning and relearning, rejuvenating spouse relationship and maintaining connections with family and friends [23]. However, the early identification of vulnerable populations in the COVID-19 pandemic would help governments to allocate resources and put appropriate and adequate strategies to contain consequences of this serious outbreak.

Conclusions

To determine old age vulnerability in different aspects related to anxiety and coping during COVID-19 pandemic. Comparisons between age groups and between males and females within the elders group has been conducted.

The degree of different aspects of anxiety and coping of the elders population in Egypt showed vulnerability in comparison of other age groups. It was consistent with other findings in Egypt before COVID-19 pandemic showed vulnerability in elders especially females.

Old age females showed higher anxiety related to COVID-19 with poor coping skills than other age groups . These findings were similar to findings from other regions from Asia, Europe, and America, suggesting there is a certain need to establish as a community and elders healthcare professionals therapeutic projects for anxiety and psychoeducation of Coping Responses with the most vulnerable group, elders and especially females.

It is possible that the lack of clinical protocols in practice and easy access to mental health services for the elders through government hospitals as well as private clinics can contribute with the practice of the elders population's regarding psychotherapy. These therapeutic projects is necessary, since COVID-19 pandemic has been the highest health impact on Elders Egyptian Population.

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Data availability The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

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Conflict of interest The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Ethical consideration Ethical approval for the study was granted by Tanta University Ethical Committee, approval Code 34394. This research has been performed In accordance with declaration of Helsinki,

Consent to participate Informed written consent for taking part in the study was obtained from each participant. The authors would like to thank the participants who took part in this study.

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