

Impact of home quarantine due to COVID-19 among Bangladeshi population

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ABSTRACT

COVID-19 is an emergency public health issue and home quarantine can prevent the transmission. Quarantine restricts the people's mobility and it has a silent impact on physical, psychological and economical aspect. The purpose was to explore the impact of home quarantine among the general population in Bangladesh. This was a descriptive type of cross sectional survey with 600 samples from different district of Bangladesh by convenient sampling with a structured and language validated questionnaire. The results indicate the huge impact of home quarantine. Among 600 participants, 71.7% (n=430) showed impact on their psychological health, 48.5% (n=291) physical health and 82.5% (n=495) on their economy. Study showed strong association between gender and psychological impact ($p < 0.01$) and very strong association between living area and their psychological impact ($p < 0.00$). There has also very strong association between their occupation and impact on their economy ($p < 0.00$). Home quarantine has a progressive negative impact on the individual's psychological health, physical health and their economy. Individual's gender, living area and occupations are strongly associated with those negative impacts due to home quarantine. Supporting agency should take initiative to mitigate this all negative impacts of home quarantine and need to develop protocol for maintaining for health during quarantine time.

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1. INTRODUCTION

Corona virus disease 2019 (COVID-19) is an emerging infectious disease caused by severe acute respiratory syndrome corona virus 2 (SARS-CoV-2) 1st found within people in Wuhan city, Hubei Province, in China [1]. The emerging disease spreads fast through respiratory droplets or close contact [2] with an estimated R_0 of up to 5.7 (95% CI: 3.8-8.9) [3].

WHO declared corona virus disease 2019 (COVID-19) as pandemic worldwide and Bangladesh is a part of this worldwide pandemic. COVID-19 caused by severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2). In March 2020 the virus was confirmed to have spread in Bangladesh. On March 2020 the

first three known cases were reported in Bangladesh by the country's epidemiology institute "Institute of Epidemiology, Disease Control and Research (IEDCR)" [4]. Infections remained low until the end of March but saw a steep rise in April [5]. In the week ending on 11 April, new cases in Bangladesh grew by 1.155 %, the highest in Asia, ahead of Indonesia, with 186 % [6]. On 12th June 2020 there have been recorded total 81,523 confirmed cases in Bangladesh, with 17,249 recoveries and 1,095 deaths [7]. Bangladesh declared a 10-day shut down on 22nd March 2020 effective from 26 March to 4 April [5]. This was later increased to 30 May [8]. From 1st June lockdown were relaxed and local transportation and office work allowed by maintaining health rules and social distancing.

Quarantine refers to separating and restricting the movement of people who are exposed to a contagious disease to see if they become sick, thus reducing their risk of infecting others [9]. Quarantine is often an unpleasant experience: loss of freedom, uncertainty over disease status, and boredom can create dramatic effects. The potential benefits of mandatory mass quarantine need to be weighed carefully against the possible long-term negative effects on human body both physically and mentally [10, 11].

Some negative psychological effects including post-traumatic stress symptoms, confusion, anger and depression are the common psychological impact due to quarantine has been reported recently [12]. Frustration, anger, anxiety are commonly affecting quarantined populations due to having inadequate basic supplies e.g. foods, water. [13]. Stroch [14] stated that individual with pre-existing mental health a condition has the possibilities to experiences their symptoms exacerbation; in other hands they may develop risk for adverse physical health consequences [15-17]. Due to SARS outbreak individual who required quarantine were experienced anxiety, acute stress, sleep disturbance and difficulty with making decisions [18]. Another study revealed the impact that 14 days quarantine for exposure to the Middle East Respiratory Syndrome had for its 1,692 participants and found that during their period of isolation, 7.6% (n=176) of individuals experienced symptoms of anxiety while 16.6% (n=275) expressed anger [19]. Current recommended COVID-19 precautions (i.e. quarantine, working from home, social distancing etc.) causing mental health problems. Mental health problems have negative impact on economy as individuals can't bear the cost of their treatment due to lack of accessibility, quality and unavailable cost [20].

Mental health problem is more among the peoples who are separated from their caregivers [21, 22]. Psychological development depends on the age of initial separation [23]. To prevent anxiety quarantined peoples are advised to make contact with their relatives/caregivers through phone call [24, 25]. Quarantined peoples developed confusion, fear, angry, anxiety etc. related to insomnia [26-29]. Another study says that economic loss due to quarantine may increase risk of psychological symptoms [19].

2. RESEARCH METHOD:

To meet up the objectives, a descriptive type of cross sectional study has been employed in the nearest district of Dhaka, Rajshahi and Chattogram divisions from 15th March 2020 to 15th May 2020. Six hundred (600) participants living in different district of Dhaka, Rajshahi and Chattogram divisions consented to participate in the study. People those were in home quarantine for at least 14 days they were the study populations. Before taking data consent was obtained from each participant. In addition, it was ensured that all information would only use for research purposes and was kept secure to researcher only. Data was recorded to mixed type of questionnaire by using depression anxiety stress scale-21(DASS-21) and self-administered questionnaire form and finally analyzed by using updated SPSS software and Microsoft office excel. Psychological impact has measured by using DASS-21 scale [30], and also some impacts has measured by participants self-perception. Pearson Chi-square test was used to find the association between variables and result was expressed in table, Chi-value and p-value (here significance level is $p < 0.05$). Inclusion criteria were age more than 18 years old, both male and female; those were mentally stable (mental stability assessed by self-developed verbal pre questions: Do you value yourself? Do you treat yourself with kindness and respects? Do you avoid self-criticism? Those gave answer positively we have collected data from that participants as a mentally stable participants) and undergo at least 14 days home quarantine. Those who were not willing to participate in the study and under 18 years old were excluded. The data was collected via both telephonic and face to face (by maintaining health rules) interview with a pre-piloted structured questionnaire with native language for getting accurate information. After obtaining the data all information was recorded in Microsoft 2010 with a password protected file and data input by independent data entry personnel to reduce bias. It was ensure the confidentiality of data and protected by primary investigator both soft and hard copy. An experienced statistician was helped to analyzed the data and association the analysis.

3. RESULTS AND DISCUSSION

Regarding the study, among 600 participants male was 475 (79.2%) and female 125 (20.8%), the mean age of the participants was 34.51 years, Most of the participants were from rural area 400 (66.7%) rather than semi-urban 55 (9.2%) and urban area 145 (24.2%). Study showed that there were about 364 (60.7%) participants from extended family and others from nuclear family. The mean income was monthly 20783.50 BDT and most of the participant's (63.7%) monthly incomes were <15000 BDT. The education status was secondary school level in most of the participants as 165 (27.5%) and illiterate was 32 (5.3%). The study also showed that different types of job were the occupation of most of the participants as 199 (33.2%) shows in Table 1.

The study showed strong association between gender and psychological impact ($p < 0.01$) due to home quarantine shown in Table 2 and there are very strong association between living area of the participants and their psychological impact ($p < 0.00$) as shown in Table 3.

Table 1. Socio-demographic status of the study

Variable	Frequency and percentage		Variable	Frequency and percentage
Gender			Marital Status	
Male	475 (79.2%)		Married	402 (67%)
Female	125 (20.8%)		Unmarried	189 (31.5%)
Age			Divorced	3 (0.5%)
<25 Years	186 (31%)		Separated	1 (0.2%)
25-35 Years	208 (34.7%)	Mean±SD 34.51±12.914	Widowed	5 (0.8%)
36-45 Years	91 (15.2%)		Types of Family	
46-55 Years	66 (11%)		Nuclear	236 (39.3%)
>55 Years	49 (8.2%)		Extended	364 (60.7%)
Living area			Monthly Income	
Rural	400 (66.7%)		<15000 Taka	382 (63.7%)
Semi-urban	55 (9.2%)		15000 – 30000 Taka	148 (24.7%)
Urban	145 (24.2%)		31000-45000 taka	35 (5.8%)
Education status			>45000 Taka	35 (5.8%)
Illiterate	32 (5.3%)		Occupation	
Can sign only	14 (2.3%)		Job	199 (33.2%)
Primary	128 (21.3%)		Business	117 (19.5%)
Secondary	165 (27.5%)		Farmer	26 (4.3%)
Higher secondary	112 (18.7%)		Day labor	85 (14.2%)
Degree	127 (21.2%)		others	173 (28.8%)
Masters and above	22 (3.7%)			

Table 2. Association between gender and psychological problem due to home quarantine

Association between Gender of the participants and facing psychological problem due to maintain home quarantine		facing any psychological problem due to maintain home quarantine		Total	Chi value	p-value
		Yes	No			
Gender of the participants	Male	n	352	123	6.677	.010
		%	74.1	25.9		
	Female	n	78	47		
		%	62.4	37.6		
	Total	n	430	170		
		%	71.7	28.3		

There were about 430 (71.7%) participants showed their psychological impact due to home quarantine whereas 291 (48.5%) showed physical impact and 495 (82.5%) showed economic impact as shown in Table 4. Moreover it has been showed very strong association between individual's occupation and impact on their economy ($p < 0.00$) indicated as shown in Table 5.

COVID-19 infection is increasing rapidly throughout the world and this is why WHO declared this is a pandemic. To prevent this corona virus transmission peoples are advised and forced to stay in quarantine (mostly in home quarantine). Due to this home quarantine peoples are suffering from physical, psychological and economic burden.

Within this study among 600 participants those were in home quarantine 79.2% ($n=475$) were male and 20.8% ($n=125$) were female. More participants age range were 25-35 years 34.8% ($n=208$) and their mean age is 34.51 years. Most of them were home quarantine in their rural area 66.7% ($n=400$), Semi-urban region were 9.2% ($n=55$) and in Urban were 24.2% ($n=145$). Among all participants 5.3% ($n=35$) were

illiterate, 2.3% (n=14) can sign only and rest of all were educated. Most of the participants were married 67% (n=402). Those were in home quarantine among them 60.7% (n=364) were in extended family and 39.3% (n=236) were in nuclear family. There were 33.2% (n=199) job holder and rest of all were businessman, day labor etc., and their mean income were 20,783 taka per month.

Table 3. Association between living area and psychological problem due to home quarantine

		Association between living area of the participants and facing psychological problem due to maintain home quarantine		Total	Chi value	p-value	
		Yes	No				
Living area of the participants	Rural	n	271	129	400	17.523	.000
		%	67.8	32.3	100.0		
	Semi-urban	n	52	3	55		
		%	94.5	5.5	100.0		
	Urban	n	107	38	145		
		%	73.8	26.2	100.0		
Total	n	430	170	600			
	%	71.7	28.3	100.0			

Table 4. Impact of home quarantine

Psychological impact		Physical impact		Economic impact	
Variable	Frequency and Percentage	Variable	Frequency and Percentage	Variable	Frequency and percentage
Facing psychological problem during home quarantine (If Yes than below all are multiple response)		Physical symptoms (If Yes than below all are multiple response)		Impact on your income due to home quarantine	
Yes	430 (71.7%)	Yes	291 (48.5%)	Yes	495 (82.5%)
No	170 (28.3%)	No	309 (51.5%)	No	105 (17.5%)
Anxiety		Excessive Sweating		Specify, is it severe?	
Yes	349 (58.2%)	Yes	4 (0.7%)	Yes	431 (71.8%)
No	83 (13.8%)	No	297 (49.5%)	No	64 (10.7%)
Depression		Head ache		Got your salary in advance?	
Yes	91 (15.2%)	Yes	65 (10.8%)	Yes	8 (1.3%)
No	341 (56.8%)	No	237 (39.5%)	No	191 (31.8%)
Panicky		Nausea		Got your full salary?	
Yes	266 (44.3%)	Yes	16 (2.7%)	Yes	81 (13.5%)
No	166 (27.7%)	No	285 (47.5%)	No	118 (19.7%)
Restlessness		Weakness		How much portion of salary you got?	
Yes	105 (17.5%)	Yes	80 (13.3%)	No salary	59 (9.8%)
No	327 (54.5%)	No	221 (36.8%)	<15000 Taka	48 (8%)
Reduce concentration to any task		Neck pain		15000-30000 Taka	3 (0.5%)
Yes	48 (8%)	Yes	108 (18%)	>30000 Taka	1 (0.2%)
No	384 (64%)	No	193 (32.2%)	Can you maintain your family cost by this present income?	
Boredom		Low back pain		Yes	203 (33.5%)
Yes	142 (23.7%)	Yes	103 (17.2%)	No	397 (66.2%)
No	290 (48.3%)	No	198 (33%)	Expenses increased?	
Sleeping difficulties		Pelvic pain		Yes	418 (69.7%)
Yes	38 (6.3%)	Yes	126 (21%)	No	182 (30.3%)
No	394 (65.7%)	No	175 (29.2%)	Prices of daily goods increased	
Anger		Fever		Yes	585 (97.5%)
Yes	75 (12.5%)	Yes	25 (4.2%)	No	15 (2.5%)
No	357 (59.5%)	No	276 (46%)	Faced any problems with this increased prices in daily goods	
Indigestion		Loss of appetite		Yes	502 (83.7%)
Yes	64 (10.7%)	Yes	57 (9.5%)	No	82 (13.7%)
No	237 (39.3%)	No	244 (40.7%)		
Increase drug addiction		Others			
Yes	2 (0.3%)	Yes	13 (2.2%)		
No	430 (71.7%)	No	288 (48%)		

Mean±SD
7541.29±47401.348

Table 5. Association between Occupation of the participants and impact on income

Association between Occupation of the participants and impact on income due to home quarantine			Impact on income due to home quarantine		Total	Chi value	p-value
			Yes	No			
Occupation of the participants	Job	n	167	32	199	38.675	.000
		%	83.9%	16.1%	100.0%		
	Business	n	100	17	117		
		%	85.5%	14.5%	100.0%		
	Farmer	n	26	0	26		
		%	100.0%	0.0%	100.0%		
	Day labor	n	82	3	85		
		%	96.5%	3.5%	100.0%		
	Others	n	120	53	173		
		%	69.4%	30.6%	100.0%		
Total	n	495	105	600			
	%	82.5%	17.5%	100.0%			

Brooks has reported negative psychological effects: post-traumatic stress symptoms, confusion, anger and depression are the psychological impact of quarantine [12]. Another study stated that frustration, anger, anxiety are commonly affecting quarantined populations due to having inadequate basic supplies e.g. foods, water etc. [13, 19]. They also expressed that among 1692 quarantined peoples 7.6% (n=176) of individuals experienced symptoms of anxiety while 16.6% (n=275) expressed anger.

This study shows that among 600 participants those were in home quarantine they are suffering from psychological symptoms 71.7% (n=430). Among them all are suffering from one or more symptoms due to this negative impact of home quarantine. Study revealed that a large number of peoples developed anxiety 58.2% (n=349), Depression 15.2% (n=91), anger 12.5% (n=75), panicky 44.3% (n=266), restlessness 17.5% (n=105), reduce concentration to any task 8% (n=48), sleeping difficulties 23.7% (n=142), increase drug addiction 0.3% (n=2).

According to Stroch [14] individual with pre-existing mental health problem has the possibilities to experiences their symptoms exacerbation, in other hands due to quarantine they develop risk for adverse physical health consequences [15-17]. What consequences of physical health may occur they did not explore. In this study, result exploring that individual who were in home quarantine they developed physical health consequences as a negative physical health impact 48.5% (n=291). Individuals are developed one or more physical health consequences were excessive sweating 0.7% (n=4), head ache 10.8% (n=65), nausea 2.7% (n=65), neck pain 18% (n=108), low back pain 17.2% (n=103), pelvic pain 21% (n=126), fever 4.2% (n=25), loss of appetite 9.5% (n=57). Wang found that individual who has psychological /mental health problems that leads great negative impact on economy as they can't bear treatment cost, lack of accessibilities, qualities and unavailable cost [20]. They did not figure out the reason strongly who leads these economic impacts.

This study figured the negative impact on economy who were in home quarantine and found that 82.5% (n=495) has greatly impacted their economy. Study explored the reason behind did not get salary in advance at the time of home quarantine 31.8% (n=191), did not get full salary 19.7% (n=118), their mean income were 7541 taka (within quarantine time), cannot maintain family cost by this present income 66.2% (n=397), increases expenses 69.7% (n=418), prices of daily goods increase 97.5% (n=585). This finding is related to above finding by Wang [20]. COVID-19 has started speeding worldwide five months back and there has no significance evidence based data on association between impact of home quarantine and sociodemographic variables of the individuals. This study tried hard to establish is there any association between them or not.

Psychological impact is more in male 74.1% (n=352) rather than female 62.4% (n=78). There has strong association between gender and psychological impact due to home quarantine where chi-value 6.68 and p-value (p<0.01). Those are living in rural area they developed more psychological symptoms and the living area is very strongly associated with psychological impact where chi-value 17.52 and p-value (p<0.00). We did not find significant association between gender and physical impact due to home quarantine where we found the chi-value 1.78 and p-value (p<0.18). There are very strong association between individuals occupation and impact on their economy due to home quarantine where chi-value 38.67 and p-value (p<0.00). Maintaining the family cost with this current income is also strongly associated with individuals occupation where chi-value 24.48 and p-value (p<0.00). These findings express that occupation has great impact on individual economy and their daily living expenses.

4. CONCLUSION

World Health Organization declares the COVID-19 as pandemic. Globally there have some suggestions for preventing the corona virus transmission where the home quarantine was chosen as one of the best method. This study was carried out to investigate the impact of home quarantine for at least 14 days. It has been found that home quarantine has negative impact to individual's mental/psychological health (depression, anger, lack of concentration are the common), physical health (head ache, neck pain, low back pain, pelvic pain, fever, loss of appetite are the common) and their economy (cannot maintain family cost, did not get full salary, increased daily expenses are common). This study also suggesting developing a protocol for preventing the home quarantine negative impact and ensuring the successful home quarantine.

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