

# Quarantine and Isolation in COVID-19: An Assessment of the Level of Knowledge of Undergraduate Students

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## Abstract

**Background:** Coronavirus disease 2019 (COVID-19) is an emerging contagious disease and also a global health concern. Globally, this pandemic has become a prodigious threat to all, particularly affecting the undergraduate students to continue their studies in Bangladesh.

**Objective:** To assess the level of knowledge regarding quarantine and isolation of coronavirus disease among undergraduate students.

**Methods:** This cross-sectional study was conducted from January 2020 to December 2020 among conveniently selected 194 undergraduate students from four universities in Dhaka, Bangladesh. Data were collected electronically through Google form using a semi-structured questionnaire.

**Results:** The mean age of students was 22.77±1.93 years which ranged from 19-29 years. Three-fourths (75.3%) of students resided in urban settings and four-fifths (80.9%) came from joint families. The students had good knowledge about quarantine (79.4%) and average knowledge about isolation (51.0%). Levels of knowledge about quarantine were statistically significant with age group, residence, family type and monthly family income. Levels of knowledge about isolation were significantly associated with family type and monthly family income.

**Conclusion:** These results may lead to good public health practices among undergraduate students and also in the community. In this situation, increasing the knowledge of undergraduate students regarding quarantine and isolation can play an important role in improving the current situation.

**Keywords:** COVID-19, Quarantine, Isolation, knowledge.

## Introduction

COVID-19 is a highly infectious disease with scarcer epidemiological evidence.<sup>1</sup> Coronavirus is a single-stranded RNA virus with crown like spikes on the surface.<sup>2</sup> Covid-19 was first reported in Wuhan, China in late December 2019.<sup>3</sup>

This virus was named the 2019 novel coronavirus (2019-nCoV) by WHO.<sup>4</sup> It's named as SARS CoV-2 on 11th February 2020.<sup>5</sup> WHO declared COVID-19 as an international public health emergency on 30th January 2020.<sup>6</sup>

The common clinical features are fever, cough, sore throat, loss of smell, diarrhea and difficulty in breathing; which may appear within two days to 14 days after exposure.<sup>7,8</sup> Droplet transmission happened through coughing and sneezing of an infected person or close contact when remaining 1mm of the infected person.<sup>9-11</sup> Person to person transmission may lead to the isolation of that patient that is part of treatment.<sup>12</sup> The mortality rate is about 1%, and it kills healthy adults as well as old people.<sup>13</sup> As there is no definite medication use of sanitizer, quarantine, isolation, lockdown that leads to deleterious effects on individual and community.<sup>14</sup>

The first case of COVID-19 was confirmed in Bangladesh on 8th March 2020.<sup>15</sup> It has conveyed a slowdown in overall lifestyles in the world and also in Bangladesh. The government declared a lockdown of all educational institutions, offices, industries and markets from 26th March.<sup>16</sup> In Bangladesh, there is a limitation in COVID-19 test and treating the patients.<sup>17</sup>

Quarantine and isolation both measures are used to prevent the transmission of COVID-19 within individuals and communities.<sup>18</sup> Quarantine is one of the most effective tools to control such infectious diseases.<sup>19</sup> It was applied as an operative measure during the SARS epidemic in 2003.<sup>20</sup> This may apply to individuals or groups who may be exposed to infectious disease and monitor perhaps they become infected or remain in the incubation period.<sup>21</sup> Isolation is the separation of the ill persons with infectious disease from non-infected person though protect the well or healthy person which is done in the hospital settings.<sup>22</sup> It is evident that previous pandemic history, lack of appropriate knowledge may create adverse effects that can lead to constructing complications among the whole nation.

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### Materials and Methods

This cross-sectional study was carried out to assess the level of knowledge about quarantine and isolation in COVID-19 among undergraduate students. Total 194 conveniently selected respondents participated in this study who was studying in purposively selected four private universities (North South University, Uttara University, United International University and Dhaka International University) located in Dhaka, Bangladesh.

The data collection was carried out by using a pre-tested semi-structured questionnaire after obtaining informed written consent from each participant during the period from January to December, 2020. Data were collected by different online platforms such as Google form, E-mail and mobile app.

The respondent's knowledge regarding quarantine and isolation was scored based on questions. Total knowledge-related questions responses were categorized accordingly. For knowledge assessment, the correct responses were scored '1' while incorrect responses were scored '0'. Then total knowledge scores were calculated by summing the scores of all questions though total knowledge scores ranging from 0-15; and was categorized as good knowledge 11-15 (>75%), average knowledge 6-10 (40 to ≤75%) and poor knowledge 0-5 (<40%). The data were checked and cleaned followed by categorizing data, coded and postcodes into SPSS v25 software. The statistical analysis was carried out by using both descriptive and inferential statistics and presented with tables and chart. Ethical approval was obtained from the Institutional Review Board of the National Institute of Preventive and Social Medicine (NIPSOM), Dhaka 1212, Bangladesh, (NIPSOM/IRB/2020/1225).

### Results

Table-I characterizes the socio-demographic profile of undergraduate university's students. The mean age of students was 22.77±1.93 years which ranged from 19-29 years where half of the students (50.5%) were from the age group 23-26 years. Among the participants, majorities (86%) were male and only (4.1%) were married. Three-fourths (75.3%) of students resided in urban settings and four-fifths (80.9%) came from joint families. 11.9% participants were studying in 1st year, 28.9% in 2nd year, 23.2% in 3rd year and 36.1% in 4th year. The mean monthly family income of the students was 65433±56582 BDT.

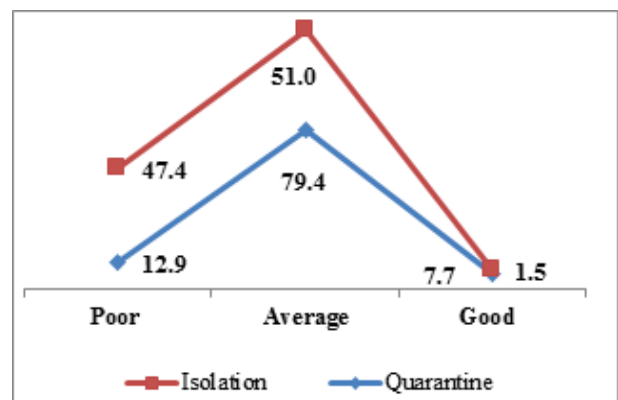
Table-II describes the level of knowledge about quarantine and isolation among the students. Almost cent percent of students (99.5% and 97.4%) heard about quarantine and could able to say the definite quarantine time (14 days). Two-fifths of them (40.2%) had known the meaning of quarantine precisely and two-thirds of the students (63.9%)

were responded that quarantine is a precautionary measure to prevent COVID-19 transmission. Above half the total students (56.7%) heard about isolation and majorities (90.7%) could able to say the definite isolation time (14 days). Above two-fifths of them (43.3% and 42.3%) were known the meaning of isolation precisely and responded that isolation is a precautionary measure.

Figure-1 illustrates that the students had good knowledge about quarantine (79.4%) and average knowledge about isolation (51.0%) in COVID-19. Table-III interprets levels of knowledge about quarantine were statistically significant with age group (P=0.002), residence (P=0.000), family type (P=0.000) and monthly family income (P=0.014). Table-IV interprets levels of knowledge about isolation were significantly associated with the family type (P=0.006) and monthly family income (P=0.000).

**Table-I:** Socio-demographic profiles (n=194)

Variables	n(%)	
<b>Age group (years)</b>	19-22	91(46.9)
	23-26	98(50.5)
	27-29	5(2.6)
	Mean±SD= 22.77±1.94	
<b>Sex</b>	Male	167(86.0)
	Female	27(14.0)
<b>Marital status</b>	Married	8(4.1)
	Unmarried	186(95.9)
<b>Academic year</b>	1st	23(11.9)
	2nd	56(28.9)
	3rd	45(23.2)
	4th	70(36.1)
<b>Family type</b>	Joint	157(80.9)
	Nuclear	37(19.1)
<b>Residence</b>	Rural	48(24.7)
	Urban	146(75.3)
<b>Monthly family income (BDT)</b>	<10000	4(2.1)
	10001-30000	30(15.5)
	30001-50000	72(37.1)
	50001-70000	33(17.0)
	70001-90000	23(11.9)
	>90000	32(16.5)
	Mean±SD= 65433±56582	



**Figure-1:** Level of knowledge regarding quarantine and isolation.

**Table-II:** Knowledge about quarantine and isolation in COVID-19 (n=194)

<b>Knowledge about quarantine in COVID-19</b>		<b>n(%)</b>
Heard about quarantine		193(99.5)
Meaning of quarantine	Quarantine means separate a healthy, but exposed persons from others	78(40.2)
	Quarantine means separate an ill persons from others	101 (52.1)
	Quarantine means separate health care providers from others	94 (48.5)
Duration of quarantine period	14 days	189(97.4)
	14-28 days	5(2.6)
Quarantine applicable for such person	Sick person	108(55.7)
	Suspected person	65(33.5)
	Diagnosed person	83(42.8)
Quarantine is a precautionary measure		124(63.9)
Places of quarantine	Home	134(69.1)
	COVID dedicated hospital	129(66.5)
	Private clinic	6.8(35.1)
	Hotel	22(11.3)
<b>Knowledge about isolation in COVID-19</b>		
Heard about isolation		110(56.7)
Meaning of isolation	Isolation means separate a healthy, but exposed persons from others	65(33.5)
	Isolation means separate an ill persons from others	84(43.3)
	Isolation means separate health care providers from others	62(32.0)
Duration of isolation period	14 days	176(90.7)
	14-28 days	15(7.7)
	>28 days	3(1.5)
Isolation applicable for such person	Sick person	79(40.7)
	Suspected person	62(32.0)
	Diagnosed person	73(37.6)
Isolation is a precautionary measure		82(42.3)
Places of isolation	Home	71(36.6)
	COVID dedicated hospital	84(43.3)
	Private clinic	57(29.4)
	Hotel	4(2.1)

\*Chi-square test done, \*Statistically significant

**Table-III:** Association of socio-demographic profiles with the level of knowledge about isolation

Variables	Level of knowledge about isolation			Total	P-value	
	Poor n(%)	Average n(%)	Good n(%)			
Age group (years)	19-22	43(47.3)	46(50.5)	2(2.2)	91(100)	0.653
	23-26	48(49.0)	49(50.0)	1(1.0)		
	27-29	1(20.0)	4(80.0)	0(0.0)		
Sex	Male	83(49.7)	81(48.5)	3(1.8)	167(100)	0.180
	Female	9(33.3)	18(66.7)	0(0.0)		
Marital status	Married	0(0.0)	8(100)	0(0.0)	8(100)	0.814
	Unmarried	92(49.5)	91(48.9)	3(1.6)		
Family type	Joint	83(52.5)	72(45.6)	3(1.9)	158(100)	*0.006
	Nuclear	9(25.0)	27(75.0)	0(0.0)		
Residence	Rural	19(39.6)	27(56.2)	2(4.2)	48(100)	0.127
	Urban	73(50.0)	72(49.3)	1(0.7)		
Monthly family income (BDT)	<10000	3(75.0)	1(25.0)	0(0.0)	32(100)	*0.000
	10001-30000	21(70.0)	9(30.0)	0(0.0)		
	30001-50000	37(51.4)	35(48.6)	0(0.0)		
	50001-70000	19(57.6)	14(42.4)	0(0.0)		
	70001-90000	8(34.8)	12(52.2)	3(13.0)		
	>90000	4(12.5)	28(87.5)	0(0.0)		

\*Chi-square test done, \*Statistically significant

Table-III interprets levels of knowledge about quarantine were statistically significant with age group (P=0.002), residence (P=0.000), family type (P=0.000) and monthly family income (P=0.014).

Table-IV interprets levels of knowledge about isolation were significantly associated with the family type (P=0.006) and monthly family income (P=0.000). The level of knowledge about quarantine was significantly associated with the level of knowledge about isolation (P=0.025).

**Table-IV:** Association of socio-demographic profiles with the level of knowledge about isolation

Variables	Level of knowledge about isolation			Total	P-value	
	Poor n(%)	Average n(%)	Good n(%)			
Age group (years)	19-22	43(47.3)	46(50.5)	2(2.2)	91(100)	0.653
	23-26	48(49.0)	49(50.0)	1(1.0)		
	27-29	1(20.0)	4(80.0)	0(0.0)		
Male	Male	83(49.7)	81(48.5)	3(1.8)	167(100)	0.180
	Female	9(33.3)	18(66.7)	0(0.0)		
Marital status	Married	0(0.0)	8(100)	0(0.0)	8(100)	0.814
	Unmarried	92(49.5)	91(48.9)	3(1.6)		
Family type	Joint	83(52.5)	72(45.6)	3(1.9)	158(100)	*0.006
	Nuclear	9(25.0)	27(75.0)	0(0.0)		
Residence	Rural	19(39.6)	27(56.2)	2(4.2)	48(100)	0.127
	Urban	73(50.0)	72(49.3)	1(0.7)		
Monthly family income (BDT)	<10000	3(75.0)	1(25.0)	0(0.0)	4(100)	*0.000
	10001-30000	21(70.0)	9(30.0)	0(0.0)		
	30001-50000	37(51.4)	35(48.6)	0(0.0)		
	50001-70000	19(57.6)	14(42.4)	0(0.0)		
	70001-90000	8(34.8)	12(52.2)	3(13.0)		
	>90000	4(12.5)	28(87.5)	0(0.0)		

\*Chi-square test done, \*Statistically significant

## Discussion

The mean age of students was 22.77±1.93 years which ranged from 19-29 years where half of the students (50.5%) were from the age group 23-26 years. Three-fourths (75.3%) of students resided in urban areas and four-fifths (80.9%) came from joint families. In the studies, in Pakistan found that the mean age was 22.60±4.64 years and the majority (56.1%) were aged between 21-25 years and came from urban areas (83.9%)<sup>23</sup> and in Bangladesh found that 46.5% were from nuclear families and 16.7% were joint family.<sup>24</sup>

In the present study, almost cent percent of students (97.4%) were able to say the definite quarantine time (14 days) which is almost similar (86.7%) to the study was done in Ethiopia.<sup>25</sup> Two-thirds of the students (63.9%) responded that quarantine is a precautionary measure to prevent COVID-19 transmission. Another study in Bangladesh demonstrated that 99.5% replied that home quarantine is crucial to saving others from COVID-19.<sup>26</sup>

Above two-fifths of them (42.3%) had responded that isolation is a precautionary measure which is far better than a study carried out (18%) in Nigeria.<sup>27</sup> Another study revealed that 83.1% of respondents said that isolation is the most effective strategy to stop the virus from spreading.<sup>28</sup> The present study demonstrated that undergraduate university students was average knowledge about quarantine (79.4%) and isolation (51.0%) for COVID-19 and the level of knowledge about quarantine was statistically significant with the level of knowledge about isolation. Small responses which may not reflect the whole population as well as face-to-face interviews didn't possible due to the lockdown situation.

## Conclusion

Bangladesh is a high population density country where major portions are undergraduate students who are the special subset of our nation. According to this study, students had a strong knowledge of quarantine and an average understanding of isolation, although there was a substantial correlation between the two types of knowledge. The improvement of the critical situation will depend mainly on increasing understanding about quarantine and isolation which can be accomplished through effective communication, enhanced community knowledge, educational campaigns and more health education programs.

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