Assessing the impact of COVID-19 on students'social relationships: A cross sectional study

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Abstract— **On 11th March 2020, the World Health Organization declared COVID-19 as a pandemic. In order to keep the spread of coronavirus in control and ensure safety, various restrictions were imposed including social distancing and numerous curfews. Thus, the pandemic has not only caused disruption in steady growth of the economy, but has also severely impacted the various aspects of social relationships of individuals due to the countless restrictions imposed. Our study focuses on the social relationships of students and how these relationships have been impacted by the novel coronavirus. The aim of this study is to analyze the impact of the COVID-19 pandemic on social relationships of students. Cross-sectional study was implemented using an online survey via the platform of Google Forms to evaluate the underlying impact of COVID-19 pandemic on social relationships of students. The interpretation of results was based on scores that were given to questions related to social relationships of students with their parents, relatives, friends and their significant others. A total of 214 students participated in the research study by voluntarily filling out the forms circulated. The average score of the impact of COVID-19 on social relationships of students among the entire study population was 4.4 (SD=2.3) out of a total possible score of 10 which indicates social relationships among students became marginally weaker during the outbreak of the pandemic. Thus, the COVID-19 pandemic has, indeed, affected the students and their social relationships with their families and friends in a negative manner. This could lead to severe mental as well as physical health implications**

Keywords—COVID-19, social relationships, students, survey

I. INTRODUCTION

The unprecedented times of COVID-19 pandemic has brought nearly every way of life all over the world to a standstill and its effects are still unfolding. The COVID-19 pandemic is the biggest global crisis humanity has faced in the recent decades. The pandemic has affected every walk of life from social interactions to mental health and from corporate life to the way we acquire our education. Lives of people across the world have been disrupted because of the subsequent lockdowns imposed due to the spread of the pandemic. Social distancing formed the core of the worldwide battle to combat the COVID-19 pandemic outbreak (Courtet et al., 2020), and thus every individual faced one or the other form of social isolation which had effects on an individual's social relationships, mental health among other things. A major impact of the pandemic has been on how the people perceive their social relationships. A social relationship can be described as an existing connection between individuals such as family members, friends, neighbours and others. Baumeister and Leary (1995) highlighted that the social relationships have been immensely studied by various researchers and it has been a widely

accepted fact that social relationships are affected by the surrounding environments and in turn it affects an individual's well-being which in turn affects. These social relationships are beneficial as they provide a sense of assurance and support to a person and also assists in reducing the anxiety levels to an extent, even though the pandemic has created obstacles such as social distancing, staying at home, still the people have found out ways to stay in contact to maintain their social interactions with their friends and family through the means of chats, calls and voice calling facilities. Even with the availability of all the facilities people still feel disconnected to each other due to the lack of physical interactions.

Teenage is, supposedly, the most crucial age for the students. It is the age where they learn to be bold, to interact and communicate and socialize. It is very unfortunate that due to the pandemic and online mode of education, students were not able to socially interact much. This has impacted their social relationships with friends as they are no longer able to interact often as they used to. Thus, social relationships among students are a vital part of the spectrum that requires the utmost importance as the dynamics of family relationships have seen a drastic shift during the pandemic outbreak due to a number of reasons that ranges from mental health and stress to the physical well-being of the student. Moreover, exploring the impacts of COVID-19 on students' social relationships will play a key role in formulating better policies by the academicians and institutions.

Thus, this paper studies and elaborates on how social relationships of students were impacted during the outbreak of the pandemic using a Social Relationship Score (SRS), and various independent variables such as their socializing nature, their family background, time spent on social media among others. Therefore this research takes an empirical path to explore the underlying effects of COVID-19 on social relationships of students by taking descriptive and inferential statistics into considerations.

II. LITERATURE REVIEW

A vast literature has been written studying the impacts of COVID-19 on the social relationships of several social units. Several researches have been carried out to understand the socio- psychological impacts of the pandemic on students. Researchers have studied various relationships including familial, intimate, peer, etc.

A number of studies examined the parent-child relationships, however, each gave a different explanation to how they were impacted. But, each study presents with itself one similarity i.e. individuals and families differed however

to what extent the COVID-19 pandemic influenced their affect and (perspective of) parenting behaviour.

Billa & Dhar (2020) carried out a study to examine the impacts of COVID-19 on the relationships of youth of Delhi NCR with their families. They found out that the pandemic had impacted their familial relationships in a positive manner. The study further elaborated that even though the pandemic brought along many negatives, close ties and family relationships stayed intact.. It also implies that family support has also increased during the lockdown situation and that the young adults are making all possible investment in the longer-term emotional bond with their families. This is inline with the conclusions drawn by Janssen et al. (2020) who found that parents and adolescents seem to deal fairly well with the pandemic situation.

In another study by Kalil et al., (2020), both positive and negative relationships between covid 19 and impact on relationships were observed in 572 low income families. They found out that due to the lay-offs at work and sudden remote working situations led to parents feeling stressed which directly impacted their relationship with their children
. Moreover, exposure to health problems in parents leads to less positive experiences in parent child relationships. However, parents who spent a lot of time in childcare were reported to have a positive impact on their relationship.

But, the study carried out by Janssen et al., (2020) offered a different explanation. According to their study, living surface income, having suffered from COVID- 19 symptoms, helping children with school at home, working from home, going to work, difficulties during COVID-19, and working with COVID-19 patients did not explain the increase of parental negative affect.

Donker et al., (2020) also argue that the lockdown situation precipitated decreases in parental support, positive parenting, and parent-adolescent negative interactions.

Closures of educational institutions and other social limitations, according to Foulkes & Blakemore (2021), can have a positive, negative, or negligible impact on adolescents' relationships, depending on the individual. They identified a number of factors that influence these disparities, including familial relationships, socioeconomic position, personality features, and current mental health disorders, with a particular focus on the quality of that adolescent's existing peer interactions. According to the findings, lockdown and restrictions may be manageable for some young people with strong peer relationships, involving a brief changeover to online socialising or, alternatively, they might experience being alone and experiencing a very frustrating end to the rewarding in-person socialising. Lockdown could be a pleasant reprieve for students who have poor peer interactions. The social pause caused by the pandemic may help certain people who have few peer interactions.

According to Sommerlad et al. (2021), those who had more face-to-face contact during lockdown experienced fewer depression symptoms. Communication through phone or video was helpful, but not as much. People who were more empathic and sociable in the past were more prone to develop depression symptoms when their social contact was restricted. While online contacts can boost social support perceptions, it's uncertain whether distant communication technologies can replace in-person engagement during times of social isolation. (Long et al., 2021)

The results of another study undertaken by Philpot et al. (2021), females experienced disproportionate impact i.e. increased feelings of loneliness compared with males.

Williamson (2020) conducted research and found that while relationship satisfaction and cause attributions did not alter with time, responsibility attributions did. Changes in relationship outcomes were not influenced by demographic factors or the pandemic's negative consequences. During the pandemic, there were slight moderation effects of relationship coping and conflict, revealing that in couples with more positive functioning, satisfaction increased and maladaptive attributions decreased, and in couples with lower functioning, satisfaction decreased and undesirable attributions increased.

In contrast, research by Jones et al. (2021) suggests that the pandemic shifted reliance, modified closeness, intensified emotions, and altered communication in most romantic partnerships. This pandemic has radically affected people's social connections in their personal relationships, in addition to compromising their physical health.

Wray-Lake et al., (2020) evaluated the effects of Covid- 19 on education-focused and media-focused teenagers in a study. Overall, the study discovered that supportive parent interactions provided strength to education-focused youth. Friendships are vital for teenage self-confidence, identity development, and psychological well-being, but education-focused kids reported less support from friends, implying some vulnerability in their lived experiences during the epidemic (Furman & Rose, 2015).

Adolescents with supportive parent connections may have less possibilities to interact with friends if they choose not to maintain friendships or are banned from using phones or social media. These limitations may be particularly difficult to adhere to during the COVID-19 epidemic, as spending time with individuals in person poses increased personal health hazards. Another possible explanation for these findings is that education-focused children receive the support they require from their parents, making them less likely to seek out or develop friendships.

Youth classed as media users, i.e. those who spend a lot of time watching TV shows and movies, playing video games, and using social media, indicated low parental support and high friend support. Their findings show that media use during COVID-19 could provide significant spaces for friendship, support, and coping. Low familial support may be prompting youth to seek out more assistance from their peers online. High media use and time spent online engaging with friends, on the other hand, may limit opportunities for parental support and pleasant interaction.

A significant percentage of these youth's media time was spent pursuing relationships with peers via chatting or texting, as well as engaging in social concerns through viewing news or online politics.

III. METHODOLOGY

A. Study Design

The cross-sectional study was conducted with an online survey using the Google Forms platform to evaluate and

explore the underlying impact of COVID-19 pandemic on social relationships of students. The survey was conducted between 2nd January and 23rd January. After rigorously interpreting and analyzing the present literature available on the COVID-19 pandemic and its critical impact on social relationships, the questionnaire was formulated and reviewed according to various elements such as relevance, suitability and simplicity of the questions. The questionnaire consisted of 19 items, which incorporated a wide array of questions, starting from the demographic characteristics, socializing nature, perceptions on the entire COVID-19 pandemic and the quarantine period in regards to their social relationships among other questions that mainly focused on different aspects of student relationships.

The questionnaire was split up into two major segments. The first division consisted of a total of 11 questions including the demographic characteristics of the participants, their socializing

nature, amount of time devoted to family activities, social media platforms and studies, impact of the pandemic on their social relationships, their perspective on the entire quarantine duration and if the participants have developed any new hobbies during the time frame of quarantine. The second division was a crucial part of our analysis and it included eight questions that mainly focused on the different social relationships and how deeply they were affected during the pandemic, that is whether they grew stronger, weaker or there was no change at all and using these questions an overall Social Relationship Score (SRS) was formulated. Five items (Questions 3 to 7 in Table III) from the second division of the questionnaire were allocated a score between 0 to 2, where 0 indicates weaker social relationships and 2 indicates stronger social relationships. For the participants who described that there was absolutely no change in their social relationships, a score of 1 was allocated to them. Hence, a total score of 10 was attainable in this division that measures the social relationships of students during the pandemic outbreak which was termed as Social Relationship Score (SRS). Higher total scores on the overall scale indicated a better social relationship of the students during the deadly pandemic and vice-versa.

B. Sampling Strategy

The data was collected using the method of convenience sampling where the eligible participants, that is students, were invited to participate in the research study by employing various means such as emailing the target respondents, social media (WhatsApp, LinkedIn and Instagram), the respondents were then asked to fill the online survey. All student participants were informed about the study in description of the form and all the participants filled out the survey voluntarily, and therefore were exempted from filling out a written consent form.

To maintain the integrity of the study and to obtain a consistent dataset, few criteria for eligibility to fill out the questionnaire were predetermined, which involved:

- Students were between the age of 16 to 25.
- Students were able read and understand English language.

C. Statistical Analysis

The collected data was cleaned, processed and analyzed using Microsoft Excel, version 2019 and Python, version 3.8

(along with the libraries such as NumpPy, Pandas, Matplotlib, Seaborn, Statsmodels and SciPy). All the categorical variables were presented as percentages and frequencies and the continuous variables were presented as mean and standard deviation. Social Relationship Score (that represents the level of social relationship of students during the pandemic) were taken on a continuous scale (from 0 to 10) and were interpreted using the midpoint, that is, if the score was above the midpoint it represented a stronger social relationship and vice versa.

To find out the empirical evidence about the factors influencing the social relationship during the pandemic, a multiple regression analysis was performed according to the variables mentioned in the Table I. Statistical significance level of 95% ($p<0.05$) was taken into considerations for the analysis.

$$Y = f(X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, X_9, X_{10}, X_{11}, X_{12}, X_{13,} X_{14,} X_{15})$$

TABLE I.   VARIABLES

Variable Name	Dummy variable required? (Yes/No)	
Dependent Variable		
Social Relationship Score - Y	No	srs
Independent Variable		
Family structure	Yes	
X_1		nuclear
X_2		extended
Educational qualifaction	Yes	
X_3		high_school
X_4		bachelors_degree
Socializing nature	Yes	
X_5		introvert
X_6		ambivert
Time spent with family	Yes	
X_7		fam_less_than_hour
X_8		fam_1to4_hour
X_9		fam_4to8_hour
Time spent on social media	Yes	
X_{10}		sm_less_than_hour
X_{11}		sm_1to2_hour
X_{12}		sm_2to4_hour
Time spent on studies	Yes	
X_{13}		stud_less_than_hour
X_{14}		stud_1to2_hour
X_{15}		stud_2to4_hour

IV. RESULTS (DESCRIPTIVE AND EMPIRICAL ANALYSIS)

A. Demographics and Characterstics of Participants

A total of 214 students participated in the study and the mean age of the participants were 19.5 years (SD=2.4). Figure 1 comprises of frequency bar graph of the ages of students. Majority (58.1%, *n*=125) of them were females and around 61.4% (*n*=132) were pursuing a bachelor's degree. Overall 53.4% (*n*=115) of the respondents reported that they were living in a nuclear family structure followed by 33.02%(*n*=71) who were living in an extended family. When the respondents were asked about their socializing nature, the majority (46.9%, *n*=101) of them identified themselves as ambiverts followed by introverts at 26.9% (*n*=58). Additionally when the students were asked if they developed a new hobby during the pandemic, a healthy amount of respondents (59.5%, *n*=128) replied that they were able to form a new hobby during the quarantine phase (Table II).
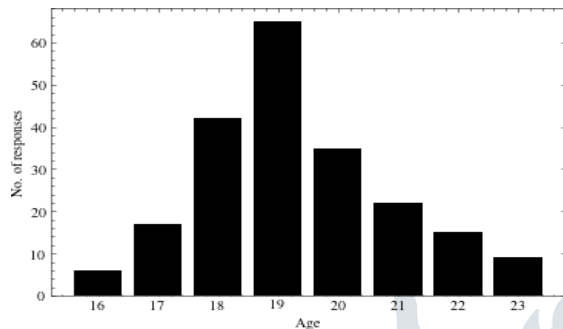

Fig. 1. Age v/s Number of Response

TABLE II.   PARTICIPANT DEMOGRAPHICS AND CHARACTERSTICS

Demographics	Frequency (%)
Age (n=214)	
16	6 (2.7)
17	17 (7.9)
18	42 (19.5)
19	65 (30.2)
20	35 (16.2)
21	22 (10.2)
22	15 (6.9)
23	9 (4.1)
Gender (n=214)	
Female	125 (58.1)
Male	90 (41.8)
Family structure (n=214)	
Nuclear	115 (53.4)
Extended	71 (33.02)
Single parent	28 (13.02)
Present education (n=214)	
High school	45 (20.9)
Bachelor's degree	132 (61.4)
Higher education	37 (17.2)
Socializing nature (n=214)	
Introvert	58 (26.9)
Ambivert	101 (46.9)
Extrovert	55 (25.58)
Did you develop any hobbies during the pandemic? (n=214)	
Yes	128 (59.5)
No	86 (40.5)

Impact of COVID-19 pandemic on social relationships: Descreptive Analysis

The average Social Relationship Score (SRS) of students was 4.4 (SD=2.3) out of a total possible score of 10 which indicates social relationships among students became marginally weaker during the outbreak of the pandemic. Only 42.7% (*n*=92) students obtained a score above 5, that indicates a positive impact of COVID-19 pandemic on social relationships of students.

When the respondents were a posed a question to tell in which way the pandemic affected their relationships, around 59% students responded by saying that their social relationships have become weaker since the COVID-19 pandemic. Additionally 29.3% of the students responded that their social relationships were significantly affected to a high degree during the pandemic outbreak. At the end of the questionnaire, students were also asked if they were able to spend more time with their family and a majority (55.3% *n*=119) of the responses were Yes, that is, they were able to spend more time. (Table III).

TABLE III.   PARTICIPANT RESPONSES REGARDING IMPACT ON SOCIAL RELATIONSHIPS DURING PANDEMIC

S.No.	Variable	Frequency (%)
1.	*Since the spread of COVID-19, have your social relationships (n=214)*	
	Become Weaker	127 (59.0)
	Remained the same	41 (19.5)
	Become Stronger	46 (21.3)
2.	*To what degree were your social relationship affected due to the pandemic? (n=214)*	
	Low	49 (22.7)
	Moderate	102 (47.4)
	High	63 (29.3)
3.	*How did your relationship with your parents become during the quarantine period? (n=214)*	
	Weaker	54 (25.1)
	Did not change	88 (40.9)
	Stronger	72 (33.4)
4.	*How did your relationship with your relatives become during the quarantine period? (n=214)*	
	Weaker	74 (34.4)
	Did not change	120 (55.8)
	Stronger	20 (9.3)
5.	*How did your relationship with your friends become during the quarantine period? (n=214)*	
	Weaker	88 (40.9)
	Did not change	78 (36.2)
	Stronger	48 (22.3)
6.	*How did your relationship with your significant other become during the quarantine period? (n=214)*	
	Weaker	58 (27.1)
	Did not change	128 (59.8)
	Stronger	28 (13.08)
7.	*How do you think that the pandemic affected the relationship in the way that they have? (n=214)*	
	Weaker	76 (35.3)
	Did not change	89 (41.4)
	Stronger	49 (22.7)

B. Predictors of the effect of COVID-19 pandemic on social relationships

We used the variables mentioned in Table I and performed a multiple regression to investigate about the various factors that contribute to the overall Social Relationship Score of students during the pandemic and to explore the statistically significant factors. The significance level was pre determined as 95% *(p<0.05)* The multiple regression statistics, regression coefficient values along with *p* values, and ANOVA values are given below in Table IV, Table V and Table VI respectively.

TABLE IV. REGRESSION STATISTICS

Multiple R	0.39318
R^2	0.15459
Adjusted R^2	0.09087
Standard Error	2.20283
Observations	215

TABLE V. REGRESSION COEEFICIENTS AND *P*-VALUES

8.	Are you able to spend more time with your family after the spread of the pandemic? (n=214)	
	No	95 (44.2)
	Yes	119 (55.3)

a. *$p < 0.05$

TABLE VI. ANOVA

	Coefficient	Standard Error	*p*-value
Intercept	1.96870	0.75502	0.00981
nuclear (X_1)	0.96644	0.47918	0.04506*
extended (X_2)	1.14672	0.50791	0.02505*
high_school (X_3)	-0.03913	0.50331	0.93811
bachelors_degree (X_4)	0.70076	0.42816	0.10328
introvert (X_5)	0.37608	0.42621	0.37863
ambivert (X_6)	0.78610	0.37867	0.03919*
fam_less_than_hour (X_7)	-0.51906	0.54016	0.33775
fam_1to4_hour (X_8)	0.37790	0.46240	0.41476
fam_4to8_hour (X_9)	0.32162	0.50813	0.52750
sm_less_than_hour (X_{10})	-0.31199	0.54049	0.56443
sm_1to2_hour (X_{11})	-0.16048	0.40234	0.69043
sm_2to4_hour (X_{12})	0.09222	0.41027	0.82239
stud_less_than_hour (X_{13})	0.64589	0.46525	0.16661
stud_1to2_hour (X_{14})	0.93064	0.43899	0.03525*
stud_2to4_hour (X_{15})	0.37915	0.47058	0.42137

The regression equation of the following model was as follows:

$$Y = 1.96 + 0.96\, X_1 + 1.14\, X_2 - 0.03\, X_3 + 0.70\, X_4 + 0.37\, X_5 + 0.78\, X_6 - 0.51\, X_7 + 0.37\, X_8 + 0.32\, X_9 - 0.31\, X_{10} - 0.16 X_{11} + 0.09\, X_{12} + 0.64\, X_{13} + 0.93\, X_{13} + 0.37\, X_{14}$$

The intercept 1.96, signifies if all the X variables are assumed to be 0, then the Social Relationship Score will be only 1.96 out of 10.

The slope of X_1, that is, 0.96 signifies that Social Relationship Score increase by 0.96 if the student lives in a nuclear family structure, holding other variables constant.

The slope of X_2, that is, 1.14 signifies that Social Relationship Score increase by 1.14 if the student lives in an extended family structure, holding other variables constant.

The slope of X_3, that is, -0.03, signifies that Social Relationship Score decreases by 0.03 if the student is attending a high school, holding other variables constant.

The slope of X_4, that is, 0.7, signifies that Social Relationship Score increases by 0.7 if the student is pursuing a bachelor's degree, holding other variables constant.

The slope of X_5, that is, 0.37, signifies that Social Relationship Score increases by 0.37 if the student is having an introvert nature, holding other variables constant.

The slope of X_6, that is, 0.78, signifies that Social Relationship Score increases by 0.78 if the student is having an ambivert nature, holding other variables constant.

The slope of X_7, that is, -0.51, signifies that Social Relationship Score decreases by 0.51 if the student spent less than an hour with the family, holding other variables constant.

The slope of X_8, that is, 0.37, signifies that Social Relationship Score increases by 0.37 if the student spent 1 to 4 hours with the family, holding other variables constant.

The slope of X_9, that is, 0.32, signifies that Social Relationship Score increases by 0.32 if the student spent 4 to 8 hours with the family, holding other variables constant.

The slope of X_{10}, that is, -0.31, signifies that Social Relationship Score decreases by 0.31 if the time spent by student on social media is less than an hour, holding other variables constant.

The slope of X_{11}, that is, -0.16, signifies that Social Relationship Score decreases by 0.16 if the time spent by student on social media is between to 1 to 2 hours, holding other variables constant.

The slope of X_{12}, that is, 0.09, signifies that Social Relationship Score increases by 0.09 if the time spent by student on social media is between to 2 to 4 hours, holding other variables constant.

The slope of X_{13}, that is, 0.64, signifies that Social Relationship Score increases by 0.64 if the time spent by student on studies is less than an hour, holding other variables constant.

The slope of X_{14}, that is, 0.93, signifies that Social Relationship Score increases by 0.93 if the time spent by student on studies is between 1 to 2, holding other variables constant.

The slope of X_{15}, that is, 0.37, signifies that Social Relationship Score increases by 0.37 if the time spent by student on studies is between 2 to 4, holding other variables constant.

From the above regression statistics we can infer that only 9.08% of the variation in Social Relationship Score (Y) is explained by the variation in X variables since the adjusted R^2 value is 0.09087.

The *p*-values which helps in finding statistical significance of the variable suggests that the students who live in nuclear family ($p=0.045$) and those who live in extended ($p=0.025$) family are highly likely to have better Social Relationship Score along with the students who have an ambivert ($p=0.039$) socializing nature and those who spend 1 to 2 hours on studies ($p=0.035$), since the significance level is taken as 95% ($p<0.05$).

CONCLUSION

Individuals generally rely on the people who are closest to them for support in the times of crisis. Many families were destroyed and countless lost someone close to them in the pandemic. Despite the two deadly waves and countless deaths, people manifested strength and kept moving on. People have been severely affected as they were isolated from their families and friends due to the lockdown imposed. Thus, personal as well as the social relationships have been greatly affected and reformed during this pandemic. Therefore, this research study mainly focused on the impact of COVID-19 on social relationships of students.

The analysis suggests that students who are a part of nuclear or extended families are likely to have a better social relationship score than those who live in a single-parent household. Moreover, students who are ambiverts, i.e. those who have personality traits of both introverts and extroverts, are likely to have a higher social relationship score over students who are mere introverts or extroverts. Another finding claims that the students who spend an average of an hour or two on studies have a better social relationship along with the score as compared to those who spend more hours on studying.

More than 55% of the respondents agreed that they began spending more quality time with their families and loved ones. Consequently, the pandemic brought about a positive change on the relationship of students with their parents and family members as it grew much stronger. It gave an opportunity to the majority of students who had a busy schedule before the pandemic to mingle and interact with their family members. The pandemic has, indeed, taught the value of time and importance of relationships to quite a few.

Even though the pandemic has taken a lot from society, it has given it an opportunity to make amends in the lifestyle. One of the upsides of the pandemic's upsides was getting an opportunity to know your close ones better, teach them, and put new things learnt and new hobbies formed into practise that books can't teach.

Approximately 88% of the respondents felt that their social relationships with their friends grew stronger despite the pandemic. The lockdown restrictions and curfews could not really pose an obstacle in existing friendships post-pandemic. Online communication via social media and other platforms made it easier to connect, re-connect and make new friends while simultaneously being in touch with old friends. After all, this pandemic took a lot from us and left us only with gratitude for everyone around us in these tough times.

More than half of the participants firmly believed that their relationship with their significant other did not change due to the novel coronavirus. Even though the virus had a deadly impact, it could not meddle with or separate the two loved ones. The pandemic has taught us to not give up and hold onto hope, no matter what.

Hence, to conclude, there have been both positive and negative impacts of the pandemic but students have learned to live with both of these aspects. It was most certainly not an easy task to keep studying while having the news of thousands of deaths each and every day. They demonstrated a great deal of strength in overcoming all the difficulties and never giving up despite the challenges faced.

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