

# The reaction of secondary school and university students toward COVID-19-induced lockdown

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## Abstract

**Background:** The Coronavirus pandemic triggered a world-wide partial lockdown. The lockdown instigated the school's shutdown making the students follow their courses in the virtual modalities while staying at home.

**Methods:** The data were collected using an online survey using a semi-structured questionnaire. The study involved anonymous as well as voluntary 77 secondary schools (Grades 9th to 12th) and 132 university students (class standing 1<sup>st</sup> to 5<sup>th</sup> year).

**Results:** The lockdown introduced excruciating experiences

for most of the students; however, it also created unanticipated opportunities to learn new skills and develop insights on how to mitigate unforeseen crises while remaining reasonably productive. The steps taken to reduce exposure to the coronavirus infection showed a gender discrepancy. Accordingly, males were disproportionately taken risks regardless of the curfew imposed, while females were deeply concerned about the lockdown-induced break of social connections. Students who were attending public schools, presumably from low-income families were found to be more productive during the lockdown compared to their private school counterparts. This shows that, in some instances, the Coronavirus pandemic is a blessing in disguise. The lockdown created mixed feelings; accordingly, the students reported significantly varied responses towards it. This also introduced some inconsistencies in the response of the students. Perceptions about the lockdown and its impact in most instances significantly varied among students, which unlocked the opportunities to learn new lessons on how to manage unprecedented crises.

**Conclusion:** Policymakers need to take into account gender and living standard while developing strategies to mitigate unprecedented challenges.

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## Introduction

Coronavirus disease 2019 (COVID-19) is caused by the acute respiratory syndrome Coronavirus 2 (SARS-CoV-2).<sup>1</sup> COVID-19 is an unprecedented challenge mankind has faced in the 21<sup>st</sup> century.<sup>2,3</sup> Thus far, there is no effective pharmaceutical intervention to contain the deadly and highly infectious virus and/or to treat COVID-19. However, an extraordinary effort has been made to produce potent vaccines and to vaccinate a significant proportion of the global population.<sup>4</sup> Some developing countries such as Madagascar earnestly advertised a home-brewed cure to treat COVID-19;<sup>3</sup> however, this effort might be found to be ineffective. The most effective preventive strategies are creating behavioral changes in the communal lifestyle of the public such as behavioral changes and delivering effective mass vaccination.<sup>5</sup>

In response to the SARS-CoV-2 pandemic, countries altogether with other institutions closed down educational establishments such as schools, colleges, and universities to contain the coronavirus. The lockdown was aimed at containing the spread of Coronavirus, especially in confined settings such as shantytowns. The lockdown made students change their conventional face-to-face learning style into stay-and-study-at-home virtual modalities. Consequently, courses and educational programs were changed from conventional to remotely accessed (distance-learning) virtual (online) learning systems.<sup>6</sup>

Although online learning is a flexible system and allows for self-directed study to the best of the learner's convenience,<sup>6</sup> it is not as effective as it has been anticipated especially in less devel-

oped countries such as Ethiopia, where the internet service is unreliable and expensive.<sup>7</sup> The online system even to the worst extent might have introduced unfairness among students that have internet access and miss it.<sup>8,9</sup> When there is no internet, traditional methods such as using hard copies, of course, materials need to be reconsidered. Although it may create iniquitousness, school shutdowns need not be a blanket order and it has to be implemented in line with the local context and when it is deemed necessary.

School shutdown may have also created social destabilization, for example, it has led to the loss of free meals or low-priced meals for students from low-income families that otherwise take their eateries at schools and results in accommodation insecurity for students living in university properties.<sup>10</sup> Owing to their youth age, the students may have not abided by the extended lockdown which by its nature demands considerable endurance.<sup>11</sup> Those courses requiring hands-on activities and continuous support of teachers could have been disproportionately affected by the virtual learning system. This study reports the adoption of secondary school and university students to COVID-19-induced lockdown and virtual learning systems.

## Materials and Methods

This is a cross-sectional study conducted amidst the coronavirus-induced lockdown implemented in 2020 by most nations including Ethiopia.

### The study sites

The study was conducted in Addis Ababa. Addis Ababa is the capital city and political headquarter of Ethiopia and Africa. There are five public universities, namely, Addis Ababa University, Kotebe Metropolitan University, Addis Ababa Science and Technology University, Ethiopian Technical University and Civil Service University, several private universities and colleges and numerous public technical and vocational training colleges, and hundreds of public and private secondary schools.

### The study populations

The study involved secondary school (9<sup>th</sup> to 12<sup>th</sup> grade) and university students (class standings 1<sup>st</sup> to 5<sup>th</sup> year) that were attending courses amidst the lockdown triggered by COVID-19 in Addis Ababa. Although limited, the students have access to internet services and appreciable knowledge of using the internet and social media platforms. This study did not involve technical and vocational students due to the very nature of their training modalities that virtually require hands-on activities, hence hardly fitting into the virtual modality.

### The study design and methods of data collection

This is a cross-sectional study, where students of diverse demographic characteristics and levels of education were accessed through an online survey created using Google Forms. The online survey consists of a semi-structured questionnaire. The core contents of the questionnaire included the demographic characteristics of the students, how the students have accustomed to and balanced their work-life during the COVID-19-induced lockdown, the feasibility of staying and studying at home, and the psychosocial impact of the partial lockdown. The explanatory variables were age, sex, school type (private vs. public), educational level (grades and class standings), and family size. The online survey was channeled using different platforms of social media, messaging groups, and email. The survey remained active online for one month. Regardless of the maximum effort made to access potential respondents, only

209 questionnaires were filled online, nevertheless, all were found to be appropriate for downstream analysis.

### Data analysis

The data was thoroughly checked and cleaned up to eliminate errors. The data were categorical and mostly analyzed using descriptive statistics and a Chi-square test was used to check for disparities in the proportion of expected and observed responses. Binomial response variables were analyzed using binary logistic regression. In most instances, those explanatory variables with statistically significant impact on the response variables were reported and discussed. The statistical analysis was performed by using IBM SPSS Statistics 23 and R.<sup>12,13</sup> Graphical presentations were produced by using Excel.

### Ethical approval and informed consent

The study was approved by the Research and Community Service Vice President Office of Kotebe Metropolitan University. Participation in the online survey was strictly anonymous and voluntary.

## Results

The outcomes of the cross-sectional study are presented in the following sections. The reports mainly present the negative impact of the lockdown with some unprecedented opportunities created by the curfew.

### Demographic characteristics of the students

The demographic characteristics of the students showed statistically significant heterogeneousness (Table 1). The size of the student's family ranges from 1 to 15 with a mean of 5.34 and a standard deviation of 1.91.

### The reaction of the students toward the lockdown

General perception questions were presented to the students to gain insight into how the students adopted the lockdown and their responses are presented in Table 2. All the dichotomous responses show a statistically significant difference, which indicates the wide differences in the perception of the students towards the lockdown. Table 2 shows that although the majority of the students adopted the lockdown, surprisingly, a comparable proportion of their counterparts experienced difficulties while they were living with the lockdown.

### Has the lockdown been bearable?

Class standing of university students showed a statistically significant impact on the adoption of the lockdown (Wald = 4.651, P-value = 0.031, AOR = 6.530, 95% CI = 1.187 to 35.932). The result showed that 37.7% (29/77) of the secondary school students have not enjoyed the lockdown whereas this was 43.9% (58/132) in the case of university students, however, the two proportions are not significantly different ( $\chi$ -squared = 0.4711, P-value = 0.4925). Specifically, the majority of the first-year university students (58.3%, 14/24) did not enjoy the lockdown, unlike the contemporary class standing counterparts and secondary school students who have felt inconveniences but every so often to a lesser extent (ranging from 18.2 for grade 12<sup>th</sup> to 50% for grade 9<sup>th</sup>).

### Difficulties encountered to socialize with friends during the lockdown

Among the explanatory variables, sex showed a statistically significant impact on the emotional difference among students

regarding the absence of socialization triggered by the lockdown (Wald = 3.947, P-value = 0.047, AOR = 1.847, 95% CI = 1.008 to 3.385). Cross tabulation shows that 66.9% (81/121) of the female students experienced difficulties due to missing in-person social connection, whereas this was 54.5% (48/88) in the case of male students, nevertheless, the proportions are not significantly different ( $\chi$ -squared = 1.9064, P-value = 0.1674). This shows that the impact of sex might have prevailed itself due to the associated (interaction) effect of contemporary explanatory variables fitted in the model. The students who have experienced troublesomeness due to the lockdown (87/209) have reflected on their thoughts, and it is presented in Figure 1. The types of the challenge reported although they are indeed interrelated show statistically significant differences ( $\chi$ -squared = 177.46,  $P < 2.2 \times 10^{-16}$ ).

### The habit of going out of home amidst the lockdown

Interestingly, the frequency of going out of home regardless of the imposed curfew shows a statistically significant difference among students that left their homes (15.8%, 33/209) to visit friends in person and those students that were refrained from practicing that (84.2%, 176/209) to the date the online survey was com-

pleted ( $\chi$ -squared = 46.786, P-value = 7.919e-12). Among the explanatory variables, sex showed a statistically significant impact on the frequency of leaving home to visit friends in person (Wald = 15.444, P-value = 0.000, AOR = 0.137, 95% CI = 0.051 to 0.369). Only 6.6% (8/121) of the female students left their homes to physically meet their friends while this was practiced by 28.4% (25/88) of male students and the proportions show a statistically significant difference ( $\chi$ -squared = 13.578, P-value = 0.0002). The students left their homes to meet in person with their friends less frequently than they used to under normal conditions. Figure 2 shows the impact of enforced curfew and the fear created due to the coronavirus. The frequency of leaving home to meet friends (Figure 2) significantly differs among students who left their homes despite the imposed curfew ( $\chi$ -squared = 121.34, P-value < 2.2e-16).

The students responded as to why they abided by the lockdown by staying and studying at home (Figure 3) and the proportion of reported reasons show statistically significant differences ( $\chi$ -squared = 62, P-value = 3.442e-14). It was found that regardless of the age most of the students that entitled to decide by themselves, abiding by the curfew was not only decided by the students but their parents also influenced the students' thoughts.

**Table 1. The demographic characteristics of the students and their schooling nature.**

Variable	N (%)	$\chi$ -squared value	df	P-value
Age, year		119.44	2	2.2e-16
13 to 17	5 (2.4)			
18 to 25	70 (33.5)			
>25	134 (64.1)			
Sex		5.2105	1	0.0225
Female	121 (57.9)			
Male	88 (42.1)			
School type		18.99	1	1.314e-05
Public	136 (65.1)			
Private	73 (34.9)			
Educational level		13.44	1	0.0002
University/College	131 (62.7)			
Secondary school	78 (37.3)			
Secondary school students' grade levels		2.2208	3	0.5279
9 <sup>th</sup>	14			
10 <sup>th</sup>	22			
11 <sup>th</sup>	19			
12 <sup>th</sup>	22			
University students' class standings		56.864	4	1.321e-11
1 <sup>st</sup> year	24			
2 <sup>nd</sup> year	52			
3 <sup>rd</sup> year	39			
4 <sup>th</sup> year	13			
5 <sup>th</sup> year	4			

df, degree of freedom.

**Table 2. Students' responses to perception questions associated with the lockdown.**

Questions	Response (N, %)		$\chi$ -squared value at 1 df	P-value
	Yes	No		
Have you been enjoying staying and studying at home?	122 (58.4)	87 (41.6)	5.8612	0.0155
Have you experienced difficulties meeting your friends in person during the lockdown?	129 (61.7)	80 (38.3)	11.488	0.0007
Have your parents been supportive of your study during the lockdown?	169 (80.9)	40 (19.1)	79.622	< 2.2e-16
Has your school helped you while you have been studying and staying at home?	125 (59.8)	84 (40.2)	8.0431	0.0046
Have you achieved something that you could not have managed to do due to a shortage of time?	129 (61.7)	80 (38.3)	11.488	0.0007

df, degree of freedom.

### Unanticipated opportunities created by the lockdown

Regardless of the challenges encountered due to the lockdown, unanticipated opportunities were created for most of the students (67.9%, 142/209,  $\chi$ -squared = 12.816, P-value = 0.0003) which enable them to enhance their mitigating ability when unprecedented crises are encountered. The opportunities created are summarized in Figure 4 and their proportions show statistically significant (likely suggestive) differences ( $\chi$ -squared = 15.343, P-value = 0.0528).

### The types of tasks performed by the students during the lockdown

The routine and special tasks that were accomplished by the students during the lockdown are summarized in Table 3. Findings show that the students tried to balance work and life regardless of the challenge imposed by the lockdown. The proportions of accomplished activities (Table 3) show statistically significant differences ( $\chi$ -squared = 424.91, P<2.2e-16).

### The assistance delivered to the students by their parents during the lockdown

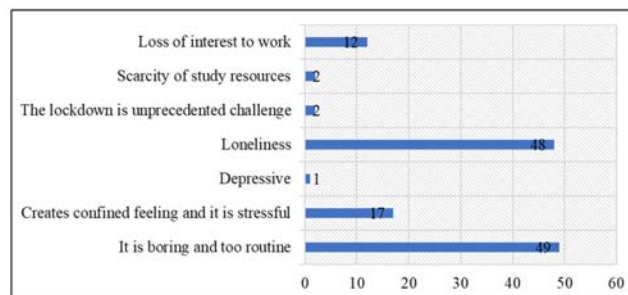
Although it is statistically not significant, university students were better assisted by their parents (84.1%, 111/132) compared to secondary school counterparts (75.3%, 58/77) during the lockdown ( $\chi$ -squared = 0.4858, P-value = 0.4858). Regardless of this, 12<sup>th</sup>-grade students were better assisted (95.5%, 21/22) by their parents compared to the rest of the grade and class standing groups (Wald = 4.044, P-value = 0.044, AOR= 12.220, 95% CI = 1.066 to 140.122). In the student groups that were assisted by their parents, the types of assistance delivered are presented in Table 4 and they show statistically significant differences ( $\chi$ -squared = 62.018, P-value = 4.65e-12).

**Table 3. The type of activities performed by the students during the lockdown.**

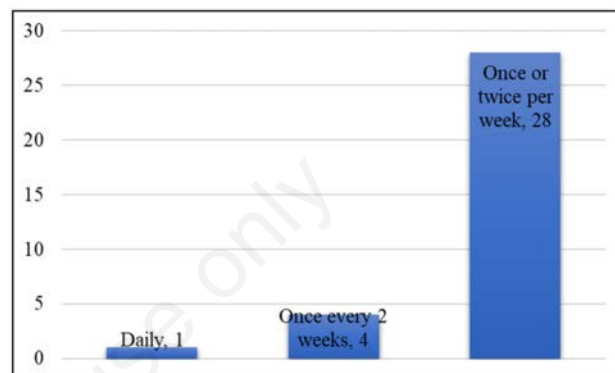
Activities performed during the lockdown	N (%)
Assisting families in routine tasks	24 (10.0)
Listening to music	3 (1.3)
Attending online courses	8 (3.3)
Doing regular physical exercise	8 (3.3)
Studying course materials	89 (37.2)
Engaging in skill development	1 (0.4)
Sleeping for longer than used to be	10 (4.2)
Communicating on social media	13 (5.4)
Planning the future	3 (1.3)
Socializing with families	6 (2.5)
Watching movies	74 (31.0)

**Table 4. The type of assistance provided to the students by their parents during the lockdown.**

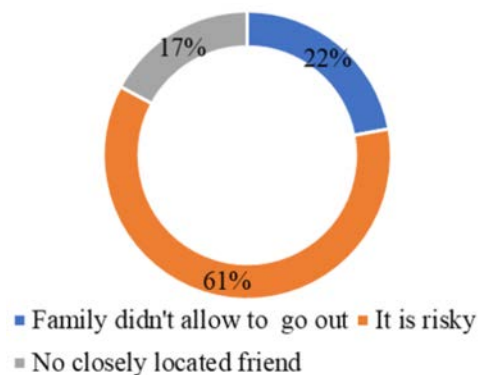
The type of support provided	N (%)
Provision of basic study materials	58 (34.3)
Emotional support	35 (20.7)
Creating an enabling environment for studying	21 (12.4)
Tutoring	36 (21.3)
Provision of adequate time	10 (5.9)
Sharing of experience on methods of study	9 (5.3)



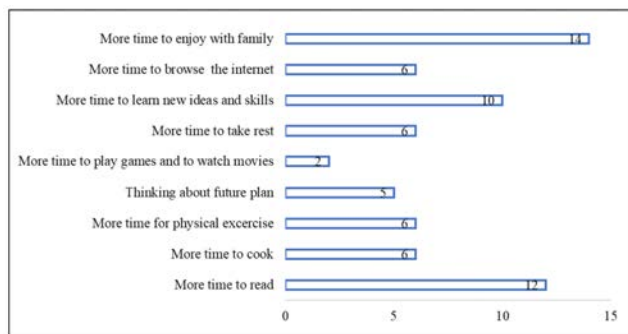
**Figure 1. The challenges that were faced by the students due to the lockdown.**



**Figure 2. The frequency of leaving home to meet in person with friends during the lockdown.**



**Figure 3. Reported key reasons for refraining from visiting friends in person amidst the lockdown.**



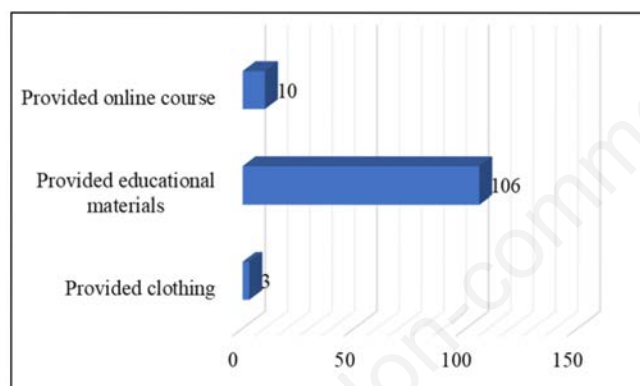
**Figure 4. The unanticipated opportunities were created due to the enabling environment created by the lockdown.**

### The assistance provided to the students by their respective schools

Although it is not statistically significant ( $\chi$ -squared = 0.6915, P-value = 0.4057), results showed that private schools (65.8%, 48/73) provided better assistance compared to public schools (56.6%, 77/136). Those students who were studying at university (45.8%, 60/131) received less attention than secondary school students (83.3%, 65/78) from their respective schools ( $\chi$ -squared = 10.893, P-value = 0.0010). The types of assistance delivered by their respective schools are presented in Figure 5 and their proportions show statistically significant differences ( $\chi$ -squared = 167.01, P-value < 2.2e-16).

### Effective management of extended holidays aroused due to the lockdown

The lockdown created unanticipated leisure time and some students utilized this opportunity to accomplish those tasks that were put aside due to a shortage of time. Public vs. private school attendance significantly affected the utilization of the created opportunities to accomplish works that were not executed due to a shortage of time (Wald = 8.009, P-value = 0.005, AOR = 2.744, 95% CI = 1.364 to 5.520). Those students who attended public schools accomplished many more tasks during extended holidays offered by the lockdown (69.1%, 94/136) compared to students who attended private schools (47.9%, 35/73) ( $\chi$ -squared = 3.8414, P-value = 0.05). The performed activities are summarized in Table 5, and they show statistically significant differences ( $\chi$ -squared = 143.4, P-value < 2.2e-16).



**Figure 5.** The types of assistance delivered to students by their respective schools during the lockdown.

**Table 5.** Activities performed due to extra time aroused due to the lockdown.

Performed activities	N (%)
Attending churches	6 (4.8)
Performing health checks	1 (0.8)
Taking sufficient leisure time	15 (12.0)
Developing skills in how to cook	5 (4.0)
Doing physical exercise to lose weight	6 (4.8)
Developing new skills	25 (20.0)
Attending online courses	5 (4.0)
Reading	47 (37.6)
Learning foreign languages	13 (10.4)
Writing poems	2 (1.6)

### Discussion

This study demonstrates that although the lockdown was unbearable for a significant proportion of the students, they managed to mitigate the odds of the curfew and spent productive time. Surprisingly, the lockdown created mixed feelings. The lockdown was unbearable and introduced inconveniences in the life of the students. Nevertheless, the students tried their best to balance their work and life and learned new skills and practices, and they performed several life-supporting tasks. Despite the common understanding that the students could attend their courses using an online platform, little effort was made to assist students through a virtual system and this might be mainly associated with limited access to the internet.<sup>7</sup> The students showed significantly varied demographic characteristics. However, the majority of the observed differences might be largely attributed to stochastic factors and/or intragroup variations, hence they were not captured by the explanatory variables included in the models.

Students from public schools managed their time more efficiently during the lockdown by utilizing the extended holiday created by the lockdown to accomplish productive and life-supporting tasks that were set aside due to a shortage of time. Usually, those students who were attending low-costing public schools and belonged to low-income families should have to manage their time more efficiently to make living amidst the pandemic. Low-income families virtually require more of their children's support to mitigate the unprecedented economic shock created by the pandemic.<sup>14</sup> Limited assistance obtained from public schools regardless of the low income of students might have also made the students engage in alternative ways of subsistence.

Tolerance of the lockdown may vary depending on living conditions. For example, the study discovered that first-year university students were comparatively highly stressed by the lockdown. This might be associated with the eagerness of freshman students who recently left secondary schools and enjoyed the university environment they joined anew. Most likely, the workload at the university level is bearable to freshman students compared to advanced class standings who are normally engaged in advanced assignments,<sup>15</sup> which makes the university environment more enjoyable to freshman students. Freshman students might be also eager to learn new insights, and they might have not lost the pleasure they enjoyed when joined the university.

Female students were disproportionately affected by the lockdown-induced limited social connections. Females opt for fame, which could be realized through socialization.<sup>16</sup> Moreover, females often feel lonely compared to males,<sup>17</sup> hence disproportionately affected by the lockdown. Females are open to sharing their feelings and thoughts with their friends and they are highly empathetic to friends.<sup>18,19</sup>

Regardless of the lockdown impositions, males went out more frequently than females during the lockdown period. Males presented risk-taking behavior and this could be attributed to disparities in biological (physiological) systems and social constructs.<sup>20,21</sup> Taking a risk in males escalates at puberty when the testosterone level peaks — the age group most of the respondents have belonged to. For example, females disproportionately abide themselves to obedience and conformity compared to males (review by Ellis *et al.*),<sup>21</sup> and females are deeply concerned about contracting and spreading the coronavirus.<sup>17</sup> Regardless of this, the went-out frequency amidst the lockdown was less compared to the usual time, which indicates that there is some fear of being infected by the coronavirus.

Abiding by the curfew was not only valued by the students, but also by the influence of their parents. Parents play a role in shaping

the behavior of their children.<sup>22</sup> Regarding provisions, although limited due to inadequate resources, the students received assistance both from their parents and schools. Compared to both university and contemporary secondary school students, parents of grade 12<sup>th</sup> students provided better assistance. This might be associated with the national secondary schools leaving exams that grade 12<sup>th</sup> students are entitled to write. However, students studying in public secondary schools and universities have received less assistance compared to those attending private secondary schools. This might be associated with the scarcity of resources in public secondary schools in which most of the students have been studying for a nominal fee. Because of a low standard of living, most of the students are studying in public secondary schools which makes it costly to avail resources the government to the large population of students. Universities were less supportive of students compared to secondary schools. This might be associated with the maturity of students, *i.e.*, university students are matured better than secondary school students and hence could manage themselves. Moreover, universities were more focused on community service and research activities associated with coronavirus to combat the negative impact created by the pandemic.

## Conclusions

As expected, the COVID-19-induced lockdown introduced inconveniences in the students' studies, work, and life. Nevertheless, some lessons have been learned on how to cope with unprecedented challenges. Interestingly, gender prevailed as a decisive clustering variable in determining differences in the management of life during the lockdown. This finding elicits a wake-up call for the development of gender-sensitive and context-dependent mitigating strategies when inescapable crises are encountered.

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