



Understanding COVID-19 and its Impact on Social Connection at the Outdoor Recreational Spaces among Central Queensland University Students

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Abstract

Preventive measures have been widely used to stop the COVID-19 outbreak, which may have a devastating impact on the social connection among university students. Particularly, Outdoor recreation has been limited due to the COVID-19 restrictions. This study seeks to understand Central Queensland University students' knowledge about COVID-19 preventive measures and identify the consequence of this practice on the social connection at the outdoor recreational spaces by using a mixed-method design (online survey and interview). Central Queensland University students (CQU) enrolled in Participatory Health Research completed an online survey (N=22) and participated in an online interview (N=15).

The results showed that students understood clearly about COVID-19 preventive measures (N=22, 100%). Students had a high number of social connections at the recreational areas, both in-person (Mean=7, Std=7) and virtually (Mean =2, Std=7) before COVID-19. Conversely, during the COVID-19 outbreak, social contacts at the recreational areas had dropped for in-person (Mean=4, Std=5.5) while connection via online platforms slightly increased (Mean =3, Std=5). Their level of social connectedness during COVID-19 moderately connected (N=8, 36%). Students' experienced impact on the three socioecological levels of intrapersonal (e.g. stress, loneliness, and behavior change), interpersonal (e.g. contacting via social media) and environmental (e.g. parks needed for emotional support).

Keywords: COVID-19, Social connection, University students, Outdoor recreational spaces

1. Introduction

As of 8 October 2020, the confirmed cases of the COVID-19 disease stood at 35,897,739 worldwide with about 1,048,781 confirmed deaths and in Australia alone, there were 27,182 confirmed cases with 897 deaths (World Health Organization, 2020a). Hence, preventive measures had been practised widely to stop the spread of COVID-19 such as social distancing, staying home orders, wearing mask, and hand hygiene (Matrajt & Leung 2020; World Health Organization, 2020c). While the practice of social distancing has shown to reduce infectious cases (Caley, Philp & McCracken, 2008; Yu et al., 2017), it may also have devastating social impacts such as social isolation, low social connection, feeling stress and loneliness (Kozlowski, Kiviniemi & Ram, 2010; El-Zoghby, Soltan & Salama, 2020; Sikali, 2020).

Social connection means the relationship among people in the social world. People need to connect with others in daily life. Based on Abraham Maslow's hierarchy of needs, social connection is one of the basic requirements for human life (Wright, 2009). Social connection is essential for mental and physical health (Seppala, Rossomando & Doty, 2013) and having the strong relationship would reduce the mortality risk (House, Landis & Umberson, 1988; Holt-Lunstad, Smith & Layton,

2010). Fifty per cent of people who had stronger social connection were more likely to survive than people with low social connection (Holt-Lunstad, Smith & Layton, 2010). Having low levels of social connection may lead to health risk (Holt-Lunstad et al., 2017). Hence, social connection is an essential factor for maintaining better health and well-being of the population.

Many people access the outdoor spaces for social connection (Kemperman & Timmermans, 2014; Jennings & Bamkole, 2019; Peters et al., 2010a). The outdoor recreational spaces such as urban parks, outdoor green spaces and recreational areas are the places that the public can utilise for recreational activities, meeting and talking (Kendal et al., 2016). The outdoor spaces such as parks is the healthy setting approach that aim to promoted health and well-being of population and people can use these places to engage activities in their life (World Health Organization, 2020c). Green space use has been associated with the social connection and community connectedness in Melbourne, Australia (Bush & Doyon, 2018). However, this social distancing and stay home orders limit the number of outdoor social gatherings, ultimately decreasing levels of social connection (Zhai & Du, 2020; Sahu, 2020). Hence, the preventive measure at the outdoor spaces to stop

the COVID-19 transmission may lead to limited social connection in society.

There are more than 1.4 millions local and international students who study in Australia in 2018 (Universities Australia, 2020). During the COVID-19 outbreak, many universities in Australia shifted to study at home and limited many social events (Department of Health, 2020a). In particular, Australian university students have been ordered to continue their work and learning at home and limit their outdoor recreation (Department of Health, 2020a). While outdoor recreational spaces are important among university students to improve their quality of life (Holt et al., 2019), little is known about how the avoidance of these outdoor areas due to COVID-19 restrictions affects university students. An understanding of students' COVID-19 knowledge and experiences are crucial in identifying strategies to reduce a feeling of disconnectedness while keeping social distance. Therefore, this research project aims to understand the knowledge of preventive measures about COVID-19 among students and its impact on their social connection at recreational activities.

1.1 Research Question

This project is investigating how students' perceptions of COVID-19 preventive measures affect their social connections during their recreational time. How do COVID-19 preventative measures affect social connection at outdoor recreational spaces?

1.2 Limitations

This study is focusing on the COVID-19 knowledge and its impact on the social connection at the outdoor recreational spaces among a select group of students. It did not include CQU students outside of the MPH or students from other universities. Hence, this result may not fully represent Australian students. In the future, the study may involve participants from different study majors and many universities to be a significant sample for university students. Furthermore, the low response rate may be a result of students worrying about COVID-19 situation and hesitating to participate in this study. Hence, to prevent any harm and uncomfortable feeling for participating in this research, an icebreaker question by asking how they felt that day was needed at the start of interview and participants were free to withdraw anytime when they feel worried to answer the questions.

2. Materials and Methods

This study applied the phenomenological research design (Patton, 2002). Phenomenology is focusing on the understanding of phenomenon from the individual's lived experiences. In this study, COVID-19 is a phenomenon, and the individuals are CQUniversity Master of Public Health students. Our group is specifically investigating COVID-19 preventive measures and its impact on university students' social connection at work, study and recreational activities. We used quantitative (online survey) and qualitative (interview) as a method.

This research project was approved by CQUniversity Human Research Ethics Committee and the approved Ethics Letter from School of Health, Medical and Applied Sciences from Central Queensland University (CQU).

2.1 Online Survey

Online survey named Qualtrics system was used to assess students' knowledge about COVID-19, which contained ten questions. Survey questions had three questions asked about general knowledge about COVID-19, two questions asked about the understanding of COVID-19 preventive measures which included nine items on how to prevent transmission and nine items about social distancing, two questions asked about the number of social connection before and during COVID-19, one question asked about the Social Connectedness Scale applied by Lee and Robbins (1995) which had eight items about Social Connectedness Scale (on Scale of 1-6, from 1 strongly disagree to 6 strongly agree), one question asked about the social support during COVID-19, and the last question asked participants who interest in completing an interview.

The survey link was sent via PBHL 20006 Quick mail to Participatory Health Research students (N=202). After an initial response rate (N=56), the surveys were reviewed for completion (N=22). The quantitative data was analysed by Microsoft Excel to figure out the results (Percentage, Mean, Maximum, Minimum, Standard deviation).

2.2 Interviews

To gain a deeper understanding of the COVID-19 experience, we each conducted interviews. From the 22 surveys, 15 students provided consent and contact information to proceed with interviews. Because of COVID-19 restriction, such as staying home orders and social distancing (Department of Health 2020b), interviews were online. As this study is part of a group project, we randomly divided the participants, so we each had five participants to interview. While we asked similar questions, some questions focused on experiences in recreational areas. Our questions focused on the way that students socialise before and during COVID-19, the COVID-19 experienced about preventive measures used and the feeling about social connection at work, study and recreational activities. The interview records were analysed by thematic analysis which is suitable for qualitative data (Liampittong, 2016). We followed the steps for thematic analysis: the line by line transcript of the data, the individual generation of initial codes, the collective categorisation, combination and final extraction of themes (Liampittong, 2016). For my part, I first transcript five interview records by using otter.ai website, generated initial codes of each five transcription, combined the similar codes, and finalised the themes. I then shared my themes result within the group to combine the similar themes as a group result. We finalised the themes by conducting an online discussion group. By combining our data, the sample size for the interview was fifteen CQU students who matched with the data saturation for qualitative study (Hennink et al., 2017).

3. Results

1.1 Social Connection at the Recreational Spaces Before COVID-19 & during COVID-19

Students have a social connection with family and friends who live in Australia. Before COVID-19, students had contacted people physically in - person (Mean=7, Std=7) but during COVID-19, students had contacted

people physically in person decreasingly (Mean=4, Std=5.5) (Figure 1).

Before COVID-19, students had connected in online virtually (Mean =2, Std=7), in contrast during COVID-19 students had connected in online increasingly (Mean=3, Std=5) (Figure 2).

Before the pandemic of COVID-19, participants connected with their friends and family. A few students expressed that *'Before COVID-19, I met with my friends on the weekend'* For the relationship with family, students mainly connected through social media or phone call. One student said that *'I still contact my family via WhatsApp, video calls and chats. Most students spent their leisure time doing recreational activities with friends and family such as travelling, eating out at a restaurant and having parties. Some views from students about their recreational activities before COVID-19 restriction, student said 'Before COVID-19, some of my friends from Australia like from Melbourne, I used to socialise by having together going somewhere like a beach, or some restaurants.'* And another student said *'Before COVID-19, I travel to many places in the Melbourne... feeling that is great...mostly travel with my friends.'*

Notably, most students connected socially at the outdoor spaces before COVID-19. All participants used to visit the park or beach to enjoy the recreational activities with their friends. One student said, *'...before COVID-19, I used to socialise by having a get together to the beach or some restaurants with some of my friends from Melbourne, Australia.'* Before COVID-19, students used the outdoor spaces with their classmates for their relaxation after class or after examinations. One student mentioned that *'I went to the park for refreshment, we had just finished our first semester, and that was our first year in Australia, and we had never been to anywhere because our university we had a lot of assignments to do and we didn't get time to go out, and in semester break, we just went there.'*

Moreover, students used the open spaces for having conversations and doing activities together, which is the way of building their social connection among their friends. One student said that *'I'm going to beaches and parks for relaxation. Sometimes I went there with my friends and family, and I'm just sitting relaxing there. Sometimes I do barbecue.'* And another student said *'Before COVID-19, it was great gatherings parties, going out to eat, and travelling.'*

1.2 Social Connection at the Recreational Spaces during COVID-19

According to the analysis of the social connectedness scale during COVID-19, more students felt somewhat connected (n=8, 36%) and disconnected (n=6, 27%) (Figure 3).

To social connection, there are three types of social support: informational, tangible and emotional (Holt-Lunstad et al. 2017). During interviews, students only discussed tangible or emotional support.

3.2.1 Tangible support

Students could not meet and greet with their friends: *'Because of the COVID-19 I cannot see my friends, I cannot meet with my relatives, I cannot go to my relative work. So, it is complicated nowadays. So, we lost social connectivity.'* Nowadays, to maintain the social connection

among them in Australia, most students did contact their friends and family through social media (e.g. Facebook Messenger, Instagram, WhatsApp, and Zoom). A few students clarified that *'We used to have a like Facebook and messengers and WhatsApp to talk with family and friends, if there is no network, sometimes a direct call as well.'* And another student said *'I contacted through social media, Facebook Messenger and with friends, I used text, Instagram, Messenger, WhatsApp...'* However, many of them also said that they still needed face to face meeting for their active social connection among friends. A few students said: *'it is still better to see them face to face ... I am the kind of person who likes to see friends face to face,'*

The social connection at the outdoor areas had been limited within family members who live in the same house only. One student said that *'There are still some people that do not keep their distance, it varies. I think people who do not keep their distance, they usually like our families, So they know each other.'* And another said, *'Because we just have poor options to go out...like going out for exercises are allowed so that me and my partner go for a walk...and I think which is good aspect of this COVID-19.'* Students could not meet or have activities with their friends at outdoor spaces such as parks and beaches during COVID-19. One student mentioned that *'I am attending the park for sitting and relaxing there.'*

Access to the park offered students a place to go out and relax. A few students expressed their park use during COVID-19 like: *'This is where I am just going to park because ... I like the nature and requirements.'* One student said that *'I just go for a walk when I get a time nearby park, it's two kilometres far from here, and then there is a park we just go there'*. Another student said, *'...there is a park we just go there, and we just sometimes sit over there and come back.'*

3.2.2 Emotional Support

Students visited parks for some mental freshness. One student mentioned that *'When COVID-19 started I did not go to the park but now when staying in this room, then, I just feel like I need some refreshments, so I go there nowadays.'* During stage three lockdown, most students spend their time at the park at least. One student had a chance to visit the park during the stage three lockdown, and she said that *'just one month before, I used to go to the park nearby. I and my friend, we walked together to the park for one hour, we talked, and we spent some time over there.'*

Students commented on their stress and fear of the virus transmission. One student mentioned that *'we do not interact now anymore because many people are maintaining social distancing, and they do not like to talk to each other. They are afraid of the Coronavirus, they come and do their things, and they are gone out.'* Another said, *'My friend is afraid of going to the park. So, we stopped going to the parks for a month because of this Coronavirus'*. Two students expressed their negative feeling like *'we at least need some recreational activity; we at least need some freedom of living. So that we can get some physical exercise, and it is so bad and stressful when we are at home, not doing anything and simply cracks my mind'*. And another said *'people used to go to the park as well and to sit there for relaxing, doing exercise, talking*

with each other... but nowadays because of stage four restriction if they want to go for exercise, they allow one hour only not more than that... so, it's quite difficult.'

Rather than outdoor recreational spaces, students found emotional support through technology. Students can contact their family and friends through online platforms specifically. For their connection with family, students remained in contact with them through social media and phone calls. Participants mostly said that their connection with family remained the same or increased because their families are more worried about COVID-19 situation in Australia plus the feeling of loneliness and stress among students. So, the connection among their family did not reduce but increased sometimes. A few students had similar sentiment that *'There is not that much difference in the connectivity with my family before and after COVID-19, but what I found, the difference is that our family more worries that we are here.'* One student often contacted her family because of feeling loneliness, *'During this COVID-19, I am calling my mom and dad three to four times a day. I do not know what to do. I am getting bored off, and I am calling them. It is not a necessary problem, but I am feeling like only sitting alone and so I want to kill sometimes.'*

3.2.3 Preventive Measures Used

Students practised social distancing during the COVID-19 situation (n=22, 100%). All students noted they were regularly washing hands with soap and water, using hand sanitisers and staying home (Figure 4).

Students practised preventative measures. One student mentioned that: *'I did social distancing, making sure to be like 1.5 meters and I'm not going out except four reasons right now, and I wear a mask because it's necessary to hand sanitiser.'* And another said, *'When I will go out, I just need to think that I need to wear masks, gloves and I used to be away from people, I should give myself at least 1.5 meter.'* However, practicing social distancing at the outdoor spaces was difficult for them, and some people around those places did not follow restriction sometimes. Another student said that *'I'm trying to maintain the social distancing like 1.5 meters, but sometimes people come nearby me which I cannot do anything on that, but as possible, I just tried to be making some distance from the people who are walking around me.'*

Many students, however, faced many difficulties with living their life with new preventive measures, and it influenced their feelings of stress and annoyance. There are three examples of students who expressed their feeling toward practising preventive measures. One student said that *'Every time I have to keep in my mind that I had my mask, when I had to go for shopping, I had to keep away from the other people, so it is challenging for me.'* Another student expressed his feeling toward keeping social distancing during COVID-19 situation like *'...it is just a social distancing that you cannot hug people or shake hands, it is awkward and frustrating.'* And another said, *'I am not having fun as much as I used to have before COVID-19, I am not able to go out on my weekends, I am not eating outside, going out just once or twice in a week just for work, it is worrying.'* Most students understand the importance of prevention as well as following the

preventive measure at the outdoor spaces, and the difficulties that arise influences their negative feeling.

4. Discussion

According to the regulations of COVID-19 in Australia, many students practised preventive measures for their daily life, when going to outdoor recreational places. Students must keep social distancing in many areas (100%), do hand sanitising (100%), stay home (100%) and wear masks (95%). Regarding the application of various restrictions to slow and stop the COVID-19 transmission, students did follow multiple preventive measures, including physical distancing (100%), which limited their social connection at the outdoor spaces. According to the Australia Bureau of Statistic (2020), people avoided large social gatherings in Victoria during the COVID-19 pandemic. The household impact of COVID-19 survey showed that 95.6 % of Victorians avoided large social gatherings and only 24.7 % were using recreational areas (Australian Bureau of Statistics 2020). One study also found that the public experienced limited social participation in their social life during COVID-19 (Li et al., 2020). Mainly, university students experienced mental health issues during the pandemic of COVID-19 as a result of low social networks (Zhai & Du, 2020; Sahu, 2020; Elmer, Mephram & Stadtfeld, 2020). Similarly, our findings show that students experienced difficulties using outdoor recreational spaces to connect with their friends, family and people during COVID-19. The preventive measures such as social distancing and stay at home orders during COVID-19 had a detrimental impact on students' perceptions and levels of social connection. Using a socioecological lens, this section will discuss the following points: the interpersonal, intrapersonal and environmental impacts of preventative measures on university students.

4.1 Intrapersonal

Staying home orders contributed to the loneliness and lack of social contact during COVID-19 (Tull et al. 2020; Williams et al. 2020). A study by Banerjee and Rai (2020), investigating the impact of social isolation during COVID-19, found limited social interactions from the social restrictions led to the feeling of loneliness. Our findings support Banerjee and Rai (2020) because students also experienced limited social connection and loneliness from mostly staying home, physical distancing and wearing masks. The additional measurement of stay-at-home orders would trigger stressful feelings while staying home and having less social connection. One student mentioned, *'I am not intended to go out even I want to go out ... it is so bad and stressful when we are at home'*. Another said, *'Because of the COVID-19, I cannot see my friends... So, we lost social connectivity'*. Our findings are similar to the research of Luchetti et al. (2020), that the social distancing and staying home orders impact on level of loneliness. This online survey targeted the American adults who experienced the pandemic of COVID-19. The study showed that there was lack of social contact during the COVID-19 outbreak and the concern about social distancing led to feelings of loneliness at the start of the COVID-19 outbreak.

Another impact of practicing preventive measures is the behavior change during COVID-19. Students tend to experience a sedentary lifestyle, which may contribute to their health and limited their social activities. This change included playing online games, watching movies, having less outdoor recreational activities but focusing more on indoor activities, and doing less physical movement. One student said that *'I did not do anything. These days I was stuck up at home and watching movies to get refreshed.'* And another said *'I do not involve in most of the activities now, before COVID-19, doing outdoor activities like Yoga and exercise.'* Hence, most students have many limitations for doing recreational activities at the outdoor spaces, which would contribute to having less social connection and may be a health risk. Some studies found that during the COVID-19 social isolation, people have fewer physical activities in their life, and this would influence their health issues (Peçanha et al. 2020; Usher, Bhullar & Jackson 2020; Campbell 2020). Consistent with another study, López-Bueno et al. (2020) researched about the impact of COVID-19 on physical activity levels. This study evaluates the physical activities and sedentary lifestyle change during COVID-19. This research focused on healthy Spanish adults, using the self-report as a method to assess their physical activities change during the COVID-19 pandemic. The study revealed that the physical activities had decreased significantly among the adults and students in Spain during the outbreak of the disease. At the same time, there was a slight increase of sedentary time. Hence, these results aligned with our result that students had more sedentary time during COVID-19 restriction.

4.2 Interpersonal

During COVID-19, social media had more power on students' social life because students remained contacting or calling their loved ones via virtual online. Our study showed that the mean number of people having physical contact dropped (mean=4) while the mean number of virtual contacts increased (mean=3). During COVID-19 restriction, many people used social media to keep a connection with their loved ones (Bei Wu 2020; Elmer, Mepham & Stadtfeld 2020). Information and technology have a vital role in social connection because the online communication platform (e.g. Facebook and Zoom) can be used to communicate with their family and community during COVID-19 (Chen et al. 2020). Our findings show that students mostly used social media to keep their social connection and to give the emotional support to people during COVID-19. One student made a statement about the necessity of using social media for the social connection like: *'I use WhatsApp a lot, and my friends contact me through WhatsApp... that is a great way at least talk with someone...that is some positivity even we cannot meet face to face.'*

4.3 Environmental

Parks become the outdoor spaces that most students used for their emotional support. Emotional support is essential because this could help people recover from the crisis event (Snider, Van Ommeren & Schafer 2011). The greenery would make them feel refreshed and boost their energy when feeling down and tired from

staying home. Students made a statement about the benefit of parks: *'I go there for physical and mental, especially right now for my mental and emotional health.'* Another student said *'I just feel like I need some refreshments, so I go to parks nowadays, before I did not'*

The availability of the outdoor spaces is essential for students during COVID-19 restriction. During COVID-19, people are more often using green space areas for their recreational activities, and this may arise from feeling stress from staying home and the limited indoor spaces (Rice et al. 2020). Researchers found that the number of recreational activities had increased significantly during COVID-19 and Venter et al. (2020) explored the use of green spaces for recreational activities in Oslo, Norway, by using mobile tracking data. They highlighted the importance of green space during the emergency. So, during the time of crisis, green spaces and parks are the important places for the public to maintain their physical and mental health (Slater, Christiana & Gustat 2020).

5. Conclusion

This study aimed to understand the students' knowledge about COVID-19 preventives and how these preventive measure practices impacted on the social connection at work, study and recreational spaces among CQUniversity students. My part in this study asked: How do COVID-19 preventative measures affect social connection at the outdoor recreational spaces? My findings revealed that students had sufficient knowledge about preventive measures to prevent COVID-19 transmission. By practising social distancing, students reported having fewer physical connections and more online social connection. From the socioecological lens, social connection was impacted on three levels: intrapersonal, interpersonal and environmental. Intrapersonal impact was feeling stress, loneliness, and behavior change to sedentary lifestyle from the preventive measure practices among university students. Interpersonal level was the rise of using social media to contact with others, and the environmental level was the need of outdoor recreational spaces for emotional support during the COVID-19 pandemic. Hence, in the time of the COVID-19 crisis, the various outdoor recreational spaces such as parks and green spaces should be promoted among university students to support their social connection and emotion because most students experienced feeling stress and loneliness during the COVID-19 lockdown.

6. Conflict of Interest

We certify that there is no conflict of interest with any financial organization regarding the material discussed in the manuscript.

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Annex 1: Figures

Figure 1 Physically in Person Social Connection Before & During COVID-19 Outbreak for Recreational Activities

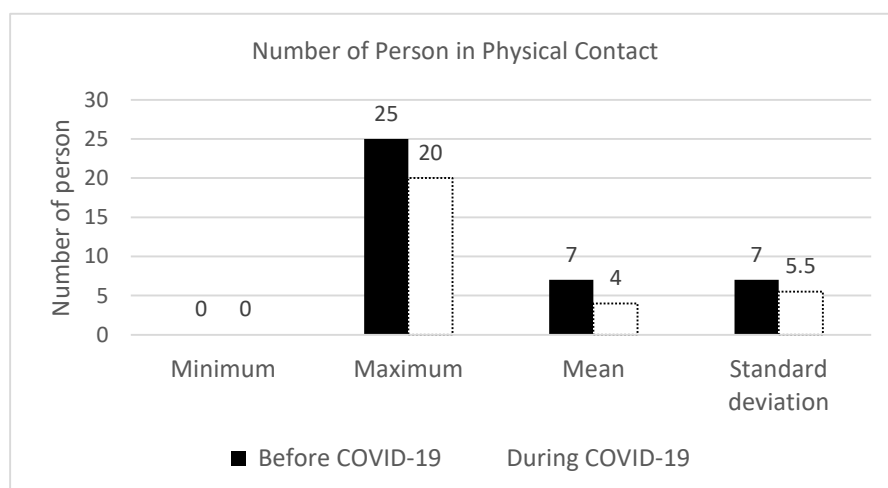


Figure 2 Online Virtual Social Connection Before & During COVID-19 Outbreak for Recreational Activities

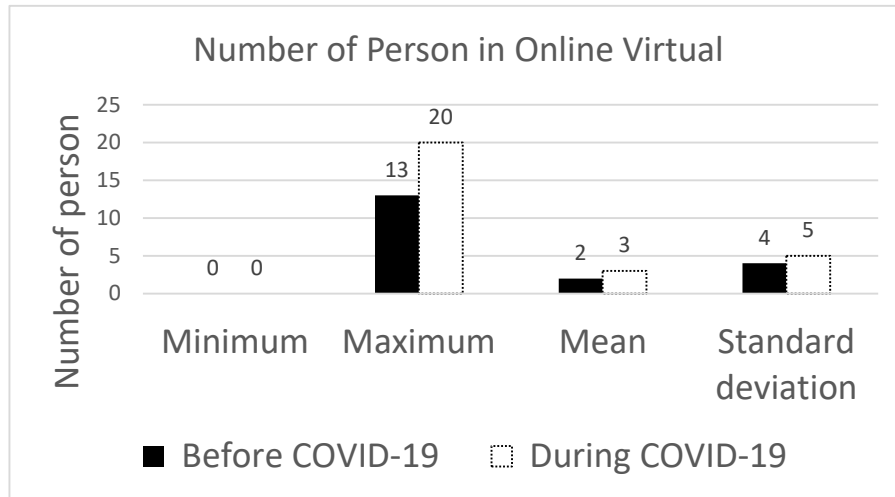


Figure 3 The Level of Social Connectedness Scale during COVID-19 Outbreak

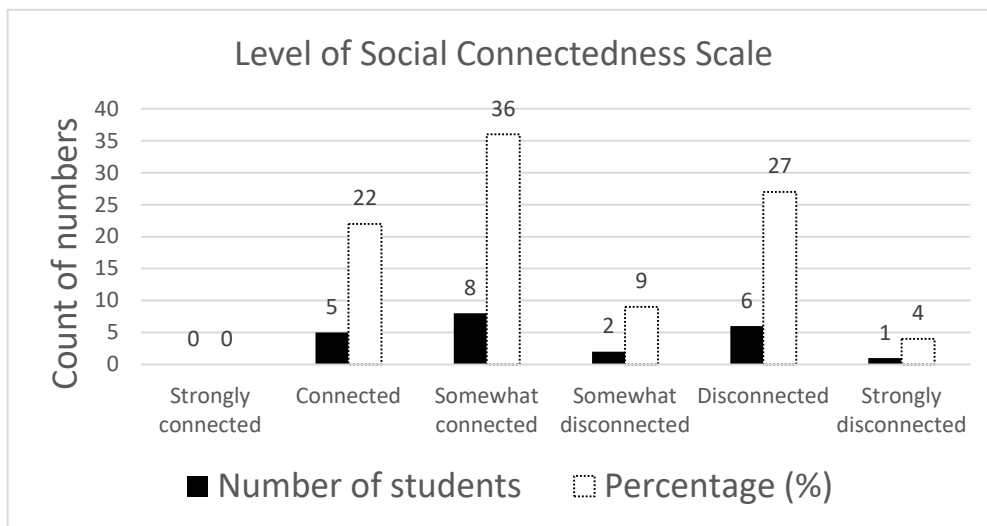


Figure 4 Students' Knowledge about Preventive Measures during COVID-19

