

Study on the Knowledge, Attitude and Behavior of College Students in Guangxi Province, China during Covid-19 Pandemic

Hui Chen¹, Luwen Gan², Zhenyou Guo^{3,*}, Fengyi Ma^{4,*}

¹College of Humanities and Management, Guilin Medical University, Guilin City, Guangxi 541114, China

²College of Business and Accountancy, Tarlac State University, Tarlac City, Tarkac 2300, Philippines

³Department of Science and Technology, Guilin Medical University, Guilin City, Guangxi 541114, China

⁴Office of Foreign Languages, Guilin Medical University, Guilin City, Guangxi 541114, China

*Corresponding Author.

Abstract:

COVID-19 has rapidly spread through countries. This occurrence has resulted in a huge negative response from the general public; the media continuously disseminate information to keep everyone notified regarding this global pandemic state. Public education is considered one of the most important measures that might help control COVID-19. This research assessed COVID-19 knowledge, attitude, and behaviour among college students in Guangxi Province, China. A cross-sectional survey-based that was conducted online on March 16, 2020 to May 4, 2020 among College students from Guangxi Province, China. The electronic survey devised by the researchers includes four main segments relating to the profile of the participants, knowledge, attitude and behavior during the novel coronavirus pandemic. The study data revealed that the respondents had an adequate level of knowledge about the mode of transmission, symptoms and prevention strategies on COVID-19. The survey likewise illustrated an overall positive attitude and behavior toward these protective measures for the virus and its responses if an infection was contracted. Also, Majority of the students don't consider the virus as a stigma or hide it from medical specialists. They avoid the situation where they can get COVID-19 and chose to seek medical treatment or isolate themselves if needed. The current study showed enough knowledge, positive behaviour and moderate attitude towards COVID-19 among the students. This response indicates the impact of the official statement confirmed by the WHO about COVID-19 being a disease outbreak and the initiatives of the health officials to notify and educate the public regarding this pandemic. Nonetheless, most research participants displayed satisfactory responses to COVID-19 knowledge behaviour and attitudes, implying the effectiveness of the awareness campaigns. The findings of the study may prove to be the basis for preparing government programs, policies and plans to adequately manage COVID-19 and to limit its transmission.

Keywords: Knowledge, Attitude, Behavior, COVID-19 pandemic.

I. INTRODUCTION

Since COVID-19 posed a global threat, and it can be spread out easily in groups or mass gathering of people, measures and mechanisms were developed and introduced to combat the virus. To strengthen the mechanisms in combating the spread of the virus, community quarantine and locked down were implemented. But this somehow affected the general public and the government negatively to some extent. Ebrahim et al. (2020)[2] stated that the worldwide lock-down around the world has contributed to the collapse of global commerce and therefore, adversely influenced each nation's economy dramatically. Globally, transportation and businesses were severely affected. Most employees work from home resulting in economic drawbacks. Schools were closed and exams were cancelled which served as another stressor for students. Moreover, as COVID19 is a new virus with one of the most catastrophic effects worldwide, its rapid spread leads to the public's uncertainty and panic which leads to hatred and stereotype. As certain groups and people are identified as the reason for this epidemic, stigmatization has arisen (WHO, 2020) [1]. This contribute even more on the fears and anxiety of people infected or not of the virus. Preventing stereotyping is important because this can cause individuals to hide their disease and not immediately ask for health support.

As researches on COVID-19 continues, numerous evidences start to evolve, and several theories also spread in the public concerning virus treatment and control. Misconceptions alongside false news about corona are also circulating quickly in the context of the popularity of social media. Often, these are alarming for certain people. Thus, numerous sites including WHO provide reliable data and mythical busters (WHO, 2020)[1]. Government agencies also urge people not to share those messages without their credibility being checked.

McCloskey et al. (2020)[3] stated that the governments, press, physicians, police force, experts, public figures and community stakeholders urged the public to avoid social events. However, due to people's attitude issues, several individuals disregard the value of social distancing. Brooks et al. (2020)[4] claimed that society's attitude and behavior affect each person to varying levels globally. The general public's awareness and attitudes are likely to affect primarily the level of commitment to individual protective practices.

Public education is considered one of the most important measures that might help control COVID-19. There is reportedly scarce information concerning the level of basic knowledge in China. The goal of this study was therefore to identify the current status of COVID-19 knowledge, attitudes and behavior among College students in Guangxi, China.

II. MATERIALS AND METHODS

A descriptive research method was used in this study utilizing a cross-sectional survey-based that was conducted on March 16, 2020 to May 4, 2020 among College students from Guangxi Province, China. Their group have been the study population in this survey. In this critical state, since it was not possible to conduct population-based surveys, the researchers developed an online method for collecting data. The survey method enabled the respondents to answer some items in multiple response.

Using Google forms, a questionnaire was designed, and the link generated was shared on emails, WeChat and other social media to the participants with a consent form attached to it. The electronic survey devised by the researchers includes four main segments relating to the profile of the participants, knowledge, attitude and behavior during the novel coronavirus pandemic.

III. RESULTS

An electronic survey, concerning the knowledge, attitude and behavior of college students in Guangxi Province during the COVID-19, was conducted with the participation of 7,069 students. The data were then recorded, tallied and analyzed.

3.1 Profile of the Research Respondents

The research study identified the profile of the participants and it only included those participants aged 16 to 25 years old. Also, 20.6% of the participants were medical students, and 79.4% were non-medical students. There were 21.2% of the participants who were males, and 78.8% were females. Over 58.6% of participants came from rural areas and 41.4% came from urban areas. All participants are students of schools in the province of Guangxi but only 75.3% of them reside within the province, while 24.7% live outside the province of Guangxi. Majority or 30.6 % of participants responded that they have 4 family members. It was also found out that 90.1 % of them responded that their families do not have children under 5 years of age. But there are 45.4 % who responded that there is an elderly person in their family (over 65 years of age) and 98.4% said no pregnant women were in their homes. Also, in terms of general health, 74.6 % said they were healthy, 21.1 % of the participants replied they had good health and 4.3% confirmed they had a disease.

3.2 Knowledge about COVID-19 Pandemic

The basic elements of COVID-19 were well known to most of the respondents, as shown in Table I. Of the total participants, 99.4 % responded that COVID-19 virus transmits and infects humans through sneezing, coughing, talking droplets, exhaling gas from direct inhalation. There were 95.8 % respondents who replied that the virus spreads through multiple modes, such as mixing droplets in the air to form an aerosol inhaled by vulnerable people while 98.4% knew that virus can be transmitted through the exposure

of the mouth, eyes and nose to infected hands. Also, 97.4% of the respondents knew that persons infected with COVID-19 require medical monitoring for 14 days. Furthermore, 94.8% agreed that asymptomatic individuals diagnosed with COVID-19 are also infectious. Most participants (97.5 %) agreed that the elderly are vulnerable to the virus while 15.86% replied that middle-aged children were also susceptible to the virus, 54.9% were aware that young adults were also vulnerable and 80.3% replied that children were also prone to the virus.

Most participants, with 99.4%, acknowledged that people with a history of contact with patients diagnosed with COVID-19 should be cautious in the situation and 99.3% replied that people with fever, fatigue, dry cough, dyspnea must be aware of the symptoms, too. 70.6 % were also aware of having gastrointestinal symptoms such as abdominal pain and diarrhea are one of COVID-19's symptoms. Also, 97% of participants were aware that travelers from and to COVID-19 infected areas are at risk to the virus. However, only 5.5 % replied that self-medication should be undertaken at home if a person has COVID-19-related symptoms, while 69.2 % said they are going to visit a hospital or clinic once they have the symptoms of the virus. Least of the respondents, with 0.3%, do not know what to do if they encounter COVID-19-related symptoms.

From the data gathered, they showed that majority of the respondents are knowledgeable about the elements of the COVID-19 especially on how this is transmitted from one person to another and the needed days to observe once contacted to an infected person. They are also aware that both symptomatic and asymptomatic persons are contagious. The basic knowledge like these are very important to a community especially to medical students who will later be serving as one of the frontliners in combating the virus. Also of great importance to non-medical students this knowledge on COVID-19, because their knowledge can also help lessen if not eliminate the transmission of the virus in their respective family and community.

It is also noteworthy to mention that majority of the respondents know how contagious and infectious COVID-19 is and that they know also who are prone or susceptible to the virus. But is also important to note that there are still some of the respondents who totally do not know what to do if they experience COVID-19- related signs or symptoms. And this should be addressed properly because little knowledge or no knowledge at all about the virus is more dangerous than the virus itself. Thus, education and awareness campaign about Covid-19 is deemed necessary to a lesser extent.

TABLE I. Knowledge about COVID-19 pandemic

n= 7,069	F (%)
1. How can the COVID-19 virus infect humans?	
The patient sneezes, coughs, speaks droplets, exhaled gas comes into close contact with direct inhalation	7025 (99.4)
The droplets are mixed in the air to form an aerosol, which is inhaled by susceptible people	6772 (95.8)

Droplets are deposited on the surface of the object, after contact with contaminated hands, then contact with mucous membranes such as mouth, nose, eye	6954 (98.4)
2. How many days do close contacts of COVID-19 virus infected persons need medical observation?	
7	81 (1.1)
10	10 (.1)
14	6882 (97.4)
21	96 (1.4)
3. Are asymptomatic people infected with COVID-19 virus contagious?	
Contagious	6702 (94.8)
Non-infectious	123 (1.7)
Don't know	244 (3.5)
4. Who is susceptible to the COVID-19 virus?	
The elderly	6891 (97.5)
Middle-aged	6082 (86.0)
Young adults	3878 (54.9)
Children	5674 (80.3)
Don't know	49 (.7)
5. What kind of situation should people be vigilant?	
Have a history of contact with patients diagnosed with COVID-19	7028 (99.4)
Fever, fatigue, dry cough, dyspnea gradually	7017 (99.3)
Headache, dizziness	5663 (80.1)
Gastrointestinal symptoms such as abdominal pain and diarrhea	4993 (70.6)
Travelers from areas with COVID-19	6857 (97.0)
6. If you have symptoms related to COVID-19, what will you do?	
Isolation at home, self-medication	388 (5.5)
Go to the nearest medical point	1770 (25.0)
Visit a medical point where a hot clinic is opened	4891 (69.2)
Don't know	20 (.3)

3.3 Attitude towards COVID-19 Pandemic

As illustrated in Table II, 54.8% of the participants were worried about COVID-19's progress daily, while 44.7% were worried only occasionally and .5% were not concerned at all. This kind of attitude is very helpful in combatting the virus. The concerns of the respondents about the progress of the number of infected people by the virus can somehow provide them more knowledge as to how infectious the virus is and how important to follow and do the health protocols.

Similarly, great number of respondents or 42.4% believed that COVID-19 will be controlled within 2-3 months with the current efforts in prevention and control of the government. While 11.5% replied that it would be controlled in 1 month only, some respondents with 23.3% believe it can be controlled in 4-6 months, 9.4% in 6 months and 13.4% do not have any idea if it will be controlled at all. This attitude on believing that the virus can be controlled is also helpful in the mental health of people. This will help them ease their fears and anxieties. The belief that it can be controlled will provide the people of positive outlook in life. It is also noticeable that there are some respondents with 0.5% do not know whether the virus can be controlled or not. This can be attributed to their lack of knowledge about COVID-19. More so, the non-availability of a dependable and tested vaccines for the virus is also a reason why some of the respondents do not know if the virus can be controlled.

As to the travel history of the respondents, almost all of the participants, with 98.9% said they had not recently visited Hubei Province / Wuhan City, China, but there were some of them with 1.2% who socialized with people in Hubei Province / Wuhan City, China, there were 3% of them who recently visited wildlife trading markets and 97.7% did none of the above-listed cases. It is safe to say that the respondents had minimal exposures to COVID-19 infected places, thus the minimal is the possibility of spreading out or transmitting the virus.

Relative to the travel history of the respondents, majority of them with 60.5% of the claimed that there was only a low personal risk of having COVID-19, while 30.0% said there was no risk at all, 7.6% said there was only a medium risk, 1.4% said there was a moderate risk and 1.5% said there was a very high personal risk. Since most of the respondents do not have exposures to COVID-19 infected areas, this led them to believe that they have no or low risk to be contracted with the virus. However, since there are some of the students who are residents outside Guangxi Province, the possibility of having medium, moderate or high personal risk can be attributed to this factor. Travelling and exposures to some areas and people infected by the virus made them to believe that they are prone or susceptible to the virus.

Since majority of the respondents have no known travel to COVID-19 infected areas and they feel and believe that they do not have the risk of having the virus, great number of respondents with 39.1% of them were not nervous or anxious about COVID 19 at all while 2.0% often felt nervous or anxious about COVID 19. 41.6% were not concerned about getting sick, while .9% was always concerned about getting sick because of the virus Likewise, the percentage of respondents with 33.9 % of participants responded

that during the pandemic they were not inclined to anger while 2.1 % still felt angry all the time. This means that their belief and attitude on their travel history and their assessment of having no or low risk to be contracted by the virus influenced them to be get mad or angry and at the same time to become optimistic as revealed in the data that during the pandemic, 37.0% of the participants felt negative or pessimistic, whereas 2.2 % felt positive about the situation. Thus, 38.4 % of the participants frequently felt tired which is normal to experience while 3.7 % felt tired all the time. The tiredness of the participants can also be attributed to their experiences, their thoughts and feelings about the pandemic. This attitude towards COVID-19 pandemic of the respondents could be inferred that it has a lot of influence to what they think, feel and do during the pandemic. The uncertainties and fear brought about by the virus really affect the lives of people which are evident to the research respondents of this study.

Table II. Attitude towards COVID-19 pandemic.

n= 7,069	F (%)
1. Are you concerned about the progress of the COVID-19?	
Follow every day	3875 (54.8)
Occasionally	3160 (44.7)
Not concerned	34 (.5)
2. How long do you think COVID-19 will be controlled with the current prevention and control efforts?	
Within 1 month	812 (11.5)
Within 2-3 months	2996 (42.4)
4-6 months	1645 (23.3)
More than 6 months	668 (9.4)
Don't know	948 (13.4)
3. Do you have the following situation?	
Recently visited Hubei Province / Wuhan City, China	76 (1.1)
Recently contacted people in Hubei Province / Wuhan City, China	85 (1.2)
People with confirmed or suspected cases in the resident environment	76 (1.1)
Recently visited the wild animal trading market	22 (.3)
None of the above	6907 (97.7)
4. What do you think is your personal risk of contracting the COVID-19 virus?	
No risk	2124 (30.0)
Low risk	4275 (60.5)
Medium risk	534 (7.6)
High risk	99 (1.4)
Very high risk	37 (.5)
5. Are you nervous or anxious within a week?	
Frequent occurrence	142 (2.0)
More occurrence	325 (4.6)

General	1912 (27.0)
Less occurrence	1923 (27.2)
Almost no occurrence	2767 (39.1)
6. Are you worried about getting sick within a week?	
Frequent occurrence	65 (.9)
More occurrence	273 (3.9)
General	1978 (28.0)
Less occurrence	1815 (25.7)
Almost no occurrence	2938 (41.6)
7. Are you prone to anger within a week?	
Frequent occurrence	151 (2.1)
More occurrence	433 (6.1)
General	2227 (31.5)
Less occurrence	1859 (26.3)
Almost no occurrence	2399 (33.9)
Frequent occurrence	151 (2.1)
8. Are you pessimistic within a week?	
Frequent occurrence	156 (2.2)
More occurrence	377 (5.3)
General	2140 (30.3)
Less occurrence	1778 (25.2)
Almost no occurrence	2618 (37.0)
9. Do you feel tired within a week?	
Frequent occurrence	262 (3.7)
More occurrence	857 (12.1)
General	2712 (38.4)
Less occurrence	1600 (22.6)
Almost no occurrence	1638 (23.2)

3.4 Personal Protective Behavior

In any given situation, people will always act and react for their safety and protection. Thus, these are reflected on their behaviors or actions which are personal protective behaviors. As shown in Table III, there were 97.6% of the participants who used medical surgical masks as one of their personal protective measures, 88.2% used medical protective masks (N95 and above), 10.4% used ordinary gauze masks, 8.2% used activated carbon mask while .2% does not know which mask to use to effectively avoid infection with COVID-19 virus. This behavior is somewhat influenced by their knowledge and attitude about the virus and the pandemic. Evidently, those who know what masks to be used are those who have higher level of knowledge about the virus, and those who do not know what mask to be used are those who have lower level of knowledge about how the virus can be transmitted to them.

The respondents' knowledge and attitude somewhat influenced also their behavior as to where and

when to use the masks. Among the participants, 81.9 % wear masks in parks and roads, 99.4 % wear masks in crowded places such as supermarkets and shopping malls, 97.0 % wear masks in small enclosed spaces such as elevators, 98.0% use masks in hospitals, and 2% don't use masks at all. A total of 67.3% of the participants said that masks should be replaced after 2-4 hours, 29.4% responded that they need to be replaced in 5-6 hours and .9% does not know when to replace them.

Similarly, about 99.1% of the participants used a mask when going out, 97.5% do not go to parties or hang out, try to go to closed places where there are more people, 97.4% practice hand hygiene and wash hands properly and in time, 80.2% practice proper diet to protect themselves from COVID-19 virus infection, and 73.7 % do not use hands directly to cover when sneezing or coughing. It is also noteworthy to mention that 75% of the respondents agreed that washing hands with soap and water avoid COVID-19 virus infection while 21.9% of participants said that washing hands cannot help with the prevention of COVID 19. All of these are influenced by their knowledge and attitudes about the virus and the pandemic. Those who lacks knowledge are those whose behaviors or actions are far different from the majority.

TABLE III. Personal protective behavior

n= 7,069	F (%)
1. What kind of masks do you think the general population can wear to effectively prevent COVID-19 virus infection?	
Medical surgical mask	6899 (97.6)
Medical protective mask (N95 and above)	6232 (88.2)
Ordinary gauze mask	732 (10.4)
Activated carbon mask	582 (8.2)
Don't know	14 (.2)
2. In what environment do you choose to wear a mask?	
Parks and roads	5788 (81.9)
Crowded places such as supermarkets and shopping malls	7029 (99.4)
Small enclosed spaces such as elevators	6857 (97.0)
Hospital	6928 (98.0)
Don't know	17 (.2)
3. Is there a time limit for using mask?	
Effective while wearing a mask	169 (2.4)
Need to be replaced (2-4 hours)	4759 (67.3)
Need to be replaced (5-6 hours)	2079 (29.4)
Don't know	62 (.9)
4. Can washing hands with soap and water prevent COVID-19 virus infection?	
Yes	5303 (75.0)
No	1545 (21.9)
Don't know	221 (3.1)
5. What measures have you taken to protect yourself from the COVID-19 virus infection?	

Wear a mask when going out	7002 (99.1)
Do not cover directly with your hands when sneezing or coughing	5207 (73.7)
Maintain hand hygiene and wash hands correctly and in time	6886 (97.4)
Don't go to parties or hang out, try to go to closed places where there are many people	6893 (97.5)
Reasonable diet	5666 (80.2)

IV. DISCUSSIONS

Pandemics and epidemics are frequent phenomena. During these times, individuals in the community face numerous challenges. Lack of knowledge sometimes leads directly to an unconcerned attitude and behavior, which can negatively impact the readiness to face these dilemmas. Impacts of such epidemic are often severe, which can negatively affect people's behavior within society and influence it. Similarly, the knowledge and attitudes of an individual greatly influenced his or her behaviors or actions in a given situation. Their preconceived notions of things strongly dictate their behaviors in different situations like during the pandemic. This survey, therefore, tried to identify and analyze the knowledge, attitudes and behaviors of the college students in Guangxi Province, China towards COVID-19 pandemic.

The research participants' knowledge, attitude and behavior during COVID-19 pandemic could be affected by several aspects, such as the prevalence of the disease, the seriousness of the outbreak and the total deaths. When COVID-19 was subsequently announced by the WHO as a pandemic, many were surprised, threatened, and panicked. This was because nobody is prepared to face the pandemic and the consequences it brought in the lives of the people all over the globe. As a result, speculations about COVID-19 have been growing every day. Since the full medical description of COVID-19 was not yet identified, still, the information provided by the government and health department significantly contributed in the awareness and knowledge of people like the respondents. Thus, the respondents believed that the most often reported indicators of COVID-19 were breathing difficulty, fever, cough, dyspnea and pneumonia. No effective antibiotic drug or vaccine has been confirmed for this virus to date.

The data in the study revealed that the respondents had an adequate level of knowledge about the mode of transmission, symptoms and prevention strategies on Copvid-19. It may have been primarily attributable to the emphasis given by the media and government on the precautionary measures. This may mean the effectiveness of the numerous awareness campaigns carried out throughout the state. This was proven by the fact that the common signs of COVID-19, the kind people who are vulnerable to COVID-19 virus, the circumstances people should avoid and the things people should do if they experience any COVID-19-related symptoms were known to almost all participants. Students and especially those majoring in the medical field get more exposed by these relevant data. Over the last week, participants in the research stated regular usage of masks, alcohols, disinfectants, hand wash. This implies students' growing concern over personal hygiene practices to prevent infection with COVID-19. Knowledge regarding COVID-19

was manifested significantly in the students' behavior and attitude as most of the respondents agree of following proper sanitary practices, self-quarantine, social distancing and social gathering avoidance.

The survey likewise illustrated an overall positive attitude and behavior toward these protective measures for the virus and its responses if an infection was contracted. The participants were found to be concerned about the progress of the COVID-19. Most of them are hoping that it will be controlled in three months. Also, they avoid the situation where they can get COVID-19. They are frequently worried about getting sick. Moreover, majority of the students do not consider the virus as a stigma or hide it from medical specialists, 69.2% of the students chose to seek medical treatment or isolate themselves if needed, which is considered to be a significant attitude towards containing the current disease.

Concerning the protective behaviors of using face masks especially in public places, this can represent a significant amount of knowledge publicized and perceived by the public, which requires further awareness campaigns to reduce the fear and confusion among the population. Participants' behavior reflects the correct way of preventing infection through different ways such as hand washing and sanitizing, maintaining proper hygiene, preventing social interactions, having balanced diet and following preventive manners when coughing or sneezing. These practices are well recognized for the prevention of several viral infections such as COVID-19.

Based on the findings, the government needs to make good efforts to provide the public with proper awareness regarding COVID-19, specifically on effective prevention strategies like using masks and frequent handwashing. It is critical because it will help to address this global health issue. Providing the public with knowledge regarding the virus can benefit from resolving some misconceptions perceived by individuals about the knowledge or attitudes toward the virus.

V. LIMITATIONS

The questionnaire used in this study was self-reported. As a result, results could suffer from subjectivity or bias in reporting. Additionally, some variables may exist such as the overall government mentality and perception.

Similarly, community-based survey throughout that specific period was not possible. Data were then collected online, depending only to the researcher's network. Validation of data through interview was not possible at the time the study was conducted. Thus, the research was limited only to individuals who had cellphones, emails and access to the internet and most of the respondents were from Guangxi Province, where the researchers are from. Further research should cover the perceptions of all regions of the country.

Lastly, it only reflects the country's college students or educated population and it should not be applied to the whole population. The knowledge, attitudes and behaviors of uneducated individuals may vary from the findings of the study.

VI. CONCLUSION

In conclusion, the present study demonstrated high level of knowledge, positive attitudes and appropriate behaviors toward COVID-19 amongst the college students in Guangxi Province, China. Such responses imply the impact of its declaration as a disease outbreak issued by the WHO and attempts by health officials to raise awareness to the public about COVID-19. Nonetheless, the majority of the participants displayed satisfactory responses to COVID-19 suggesting awareness and positive attitudes, showing the effectiveness of the awareness campaigns. The research findings could be used as a reference or basis for designing prevention programs among college students and the public in general, and useful in guiding the initiatives and planning processes of the national health officials to effectively generate and prevent the spread of COVID-19.

ACKNOWLEDGEMENTS

Supported by a project grant from Guangxi Philosophy & Social Science Research Project (Grand No.20FGL010) and the Guangxi Bagui Scholars. The authors wish to thank the study participants for their contribution to the research, as well as current and past investigators and staff.

ETHICAL APPROVAL

Ethical approval was obtained from Guilin Medical University Ethics Review Committee.

Ethical Consideration: The participants were given a brief description of the purpose and aims of the research. The researchers discussed the steps of the data collection to the participants explicitly and accurately. The participants were also given an opportunity to ask questions, and all questions were answered correctly and dealt with properly before a consent form was obtained from the participants.

All participants were given a copy of the informed consent as well as a cover letter reassuring the privacy, anonymity, and confidentiality of the data gathered.

REFERENCES

- [1] World Health Organization (2020) Pneumonia of unknown cause- China, <https://www.who.int/csr/don/05-january-2020-pneumonia-of-unknown-cause-china/en/>
- [2] Ebrahim SH et al. (2020) COVID-19 and community mitigation strategies in a pandemic, BMJ 368. <https://doi.org/10.1136/bmj.m1066> (2020, accessed 10 August 2020)
- [3] McCloskey et al. (2020) Mass gathering events and reducing further global spread of COVID 19: A political and public health dilemma. The Lancet 395:1096-1099
- [4] Brooks et al. (2020) The psychological impact of quarantine and how to reduce it: rapid review of the evidence. The Lancet 395:912-920