

ASSESSMENT OF COMPLIANCE WITH COVID-19 NON-PHARMACEUTICAL PROTOCOLS AMONG UNIVERSITY OF NIGERIA COMMUNITIES

Achadu, Peter Ada

Department of Linguistics, Igbo and Other Nigerian Languages, University of Nigeria, Nsukka

achadu.peter@unn.edu.ng

+2348068360547

Umaru, Jacob Yakubu

Department of Languages and Linguistics, Nasarawa State University, Keffi.

umaruyakubu@nsuk.edu.ng

+2348067894041

Abstract

The rapid increase in COVID-19 case numbers, deaths, and hospitalisation of the third wave in the country is a matter of concern, particularly the alarming spread in some states of the federation where polarising opinions, changing policies and misinformation abound. The paper draws attention of the members of the campuses of the University of Nigeria, Nsukka to this looming danger to mount a greater surveillance, enlightenment campaign about the attitudes of the university communities toward compliance with COVID-19 related non-pharmaceutical interventions/protocols. 400 members of the university communities were surveyed from the two campuses to ascertain their level of compliance with non-pharmaceutical protocols of COVID-19. The study adopted a survey research design and the results were analyzed descriptively using the mean scores of the respondents on each item in the questionnaire and oral interview purposively conducted. The study found that the overall attitudes of the students at the two campuses are low, while that of the teaching and non-teaching staff are high depending on individual self-consciousness. The results suggest that the university management should intensify its efforts on creating awareness about effects of the pandemic on people of the university communities in particular, in the nation at large and the world in general.

Keywords: University communities, Non-pharmaceutical protocols, public health, Compliance.

1. Introduction

The COVID-19 pandemic has caused unprecedented global health, economic, and social disruptions since 2019. According to Shumway, et. al. (2021) posit that COVID-19 is caused by SARS-CoV-2 virus (WHO, 2020, Konda, et al, 2021). The World Health Organisation categorised COVID-19 as a pandemic on March 11, 2020. As of November, 2020, the number of global confirmed cases and deaths rose to over 52, 657, 000 and 1, 291, 000 respectively (WHO, 2020). In Nigeria, as at October, 2021, the confirmed cases were numerous and deaths rose to 209, 299 with active cases of 9, 319 (NCDC, 2021). Equally, the economic and psychological implications on the lives of the populace as a result of outbreak of the pandemic has been felt across the globe, because many governments embarked on lockdowns and interruption of citizens' economic/social activities during rapid infection increases. These countermeasures were remarkable, while their effectiveness depended on attitude of the populace toward COVID-19. Experts have suggested that increased compliance with non-pharmaceutical protocols can reduce the consequences of the pandemic and increase compliance in future could save tens of thousands of lives in Nigeria alone and the world in general. Non pharmaceutical interventions include wearing of masks, practicing physical distance, washing hands, and sanitising surfaces, among other things.

Although, the spread of the pandemic in Nigeria and Enugu in particular appeared relatively limited because most Nigerians are unwilling to adopt mitigation measures to slow the spread of the pandemic. Though, scientific evidence attest to the efficiency of the interventions such as masks, social/physical distancing and increased hand washing and surface sanitising; many members of the university communities refuse to take these precautions seriously (Fetzer, et al, 2020). The possible spread of COVID-19 on campuses has been of particular concern because university students engage in vigorous activities, such as academic activities, sports, clubs, frequent travelling, interaction with both teaching and non-teaching staff, they have more opportunities to get into contact with others in contagious states of the federation. Spread of COVID-19 on campuses has the potential to spill over into more vulnerable communities adjacent to the campuses (Olaimat, et al, 2020). The long-term consequences of COVID-19 infections are not quantifiable, thus widespread infection among the campuses could plausibly lead to complications in the future. To avoid the effects of this unforeseen circumstance the university authority has to re-lunch possible measure(s) to prevent possible outbreak of this pandemic in our campuses through forceful compliance with non-pharmaceutical measures. In this study we used structured questionnaire to identify the level of compliance amongst set of the university communities from the two campuses (Enugu and Nsukka), and discovered that the level of compliance with non-pharmaceutical protocols in the campuses are not encouraging.

2. Literature review

Much has been said about non-pharmaceutical intervention protocols during COVID-19 pandemic. In pandemic, non-pharmaceutical protocols/interventions, according to Solomon, et. al. (2022), are crucial in curbing disease spread, especially in the absence of vaccines and other pharmaceutical interventions. It is widely accepted that in public health that early intervention is an important step to halting the progression of new communicable disease threats. Prior to the COVID-19 pandemic, the impact of non-pharmaceutical protocols has been largely studied in controlling influenza outbreaks, including the 1918/1919 influenza pandemic (Briskest, Lacetera, Macis, & Tonin, 2020). Akter (2020) avers that non-pharmaceutical protocols include actions that can be taken by individuals and the larger community. These include frequent hand washing, covering coughs and sneezes, isolating sick persons, contact tracing, quarantining exposed persons, and physical/social distancing measures for the general population. Akter adds that Physical/social distancing measures include containment strategies such as the closing of schools and workplaces, restricting public gatherings, curfews, quarantine, and maximizing telework (when applicable)

In the absence of treatment beyond supportive care and vaccination for the early parts of the COVID-19 pandemic, non-pharmaceutical protocols were implemented across the world to prevent and control the transmission and spread of SARS-CoV-2. By early March 2020, several countries in Africa (affected and unaffected by COVID-19) began mobilizing in response to the pandemic. This included prompt case identification, information campaigns to sensitize citizens, and building laboratory capacity (Solomon, et al, 2020). Some countries, according to Koh, Naing, and Wong (2020) relied on innovative strategies such as using locally produced cloth masks, soaps, and hand sanitizers, developing inexpensive diagnostic tests, testing pooled COVID-19 samples, and using drones to transport test kits and samples to and from hard-to-reach areas. Koh et al, (2020) reiterate that by the end of March 2020, many African Union Member States had imposed travel bans on flights arriving from certain Asian and European countries. In the following two months, almost two-thirds of African Union member states had closed their borders to all international travelers, except for cargo, freight, and expatriation of foreign nationals (Briscese, et al, 2020). Fifteen countries, including Nigeria and Rwanda, implemented border closures before any COVID-19 cases were confirmed (Hartwich & Massoud, 2020). According to Hartwich, et al, (2020), other non-pharmaceutical protocols, such as restrictions of movement and public gathering, and closure of schools and workplaces were also implemented across the region.

3. Theoretical framework

This study adopted COVID-19 conspiracy theories in analyzing the data collected from the respondents. Conspiracy theories according to Douglas and Chicocka (2021), are theories that attempt to explain significant events and circumstances as the malevolent acts of secret and powerful groups. However, Benard, Akaito, Joseph and David assert that conspiracy theories ranges from entirely fabricated content to the instrumentation of tentative or speculative findings to which absolute certainty is attributed by what resembles a game of whispers. Conspiracy theories reject standard explanation for events and describe them as a secret plot perpetrated by influential people or organisations. These theories increase during social crises or health emergencies, due to uncertainty, contradictions and psychological distress associated with the event. According to Douglas, et al (2017) three reasons move people to accept conspiracy theories, these include: epistemic, existential, and social factors. Epistemic needs include desire to satisfy curiosity and avoid uncertainty. For example, conspiracy beliefs with the search for patterns and meaning even when no such patterns exist, and with the lower level of education. Existential needs involve the desire to restore a threatened sense of security and control, for instance, people are more likely to believe conspiracy theories when they are anxious or worried. While social needs entail the desire to hold one's self and one's group positive regard. For example, people are more likely to believe conspiracy theories if they need to feel unique compared to others, feel a need to belong, or feel that their group is more underappreciated or under threat. These theories are apt because during pandemic, people's psychological needs are likely to be particularly frustrated. Uncertainties are high, and people are worried and fearful for their future and the future of their loved ones.

4. Methodology

The questionnaire was administered through personal contact because the researchers are members of the university community with the parameters given to match the profile of the students and members of the staff in the two campuses. The questionnaire contains five clusters of ten questions in each with 50 items measurement model taking into account our demographic parameters which centred on the attitudes of the members of the two campuses toward compliance with non-pharmaceutical protocols of the COVID-19 pandemic in the university. The study targeted students, teaching staff, and non-teaching staff of the two campuses of the university with participants at age 18 or above. The questionnaire were administered randomly to approximately equal proportion of male and female respondents. 500 questionnaire were distributed but only 400 were retrieved. The data were collected between August, 20 and October 30, 2021. The time was within the commencement of the 1st semester, 2021/2022 academic session. Also, qualitative interviews were conducted with respondents at the campuses to refine the instrument and test for validity. The data from the interviews were transcribed manually and analyzed by three students independently, who then collaboratively agreed upon a score for each of the interview transcript. The cut-off points for the mean value was determined to be 2.50. Items that attract mean scores from 2.50 and above were considered as positive responses while items with scores of less than 2.50 were considered as negative responses.

Table 1: Factors shown to influence compliance with non-pharmaceutical protocols

Government policies

Polarizing opinion

Misinformation

Trust in government handling of pandemic issue

Practice of non-pharmaceutical protocols

News source and exposure to news

Government Policies

To elicit government policies about pandemic in Nigeria, respondents are asked to rate their views about the economic, social and scientific views on a 4 point Likert-type scale (Nworgu, 1991, Nadelson, et al 2014, Okolo, 2009). SA - Strongly agreed =4, A – Agreed = 3, SD – Strongly disagreed = 2, D – Disagreed = 1. The above values attached to each item helped in analysing the data.

Table 2: Responses on respondents on whether government economic policy during the pandemic in Nigeria is favourable

Response rating (X)	Frequency (F)	FX	Mean (\bar{x})
SA = 4	40	160	
A = 3	30	90	
SD = 2	200	400	
D = 1	130	130	
Σ	400	780	1.95

The result on the above table indicates that the government economic policies during the period of pandemic in Nigeria is not favourable because 40 respondents strongly agreed and 30 of them agreed. This brought the total number of the agreed respondents to 70 whereas a number of 330 disagreed with the statement. The mean score of the table is 1.95 which is below the cutoff point of 2.50, thus, the populace did not see anything favourably with the government policies during pandemic era in Nigeria.

Table 3: Reactions of the respondents toward social and scientific view of the government during pandemic in Nigeria

Response rating (X)	Frequency (F)	FX	Mean (\bar{x})
SA = 4	25	100	
A = 3	75	225	
SD = 2	180	360	
D = 1	120	120	
Σ	400	805	2.01

Going by the result on the above table, it shows that 25 respondents strongly agreed that government policies on social and scientific policies is encouraging and supported by 75 respondents, while 180 respondents disagreed with the said assertion with 120 of the respondents rendered their voices to the statement. This implies that 300 out 400 respondents vehemently asserted that government policies on social and scientific view within the period of pandemic is not encouraging with the mean score of 2.01,

which is below the cut-off mark of 2.50. Therefore, the masses did not support the decision of the government on social and scientific policies as at the time of pandemic Nigeria.

Table 4: Do you agree that there are polarising opinions about Covid-19 pandemic in Nigeria?

In order to measure participants' reactions about polarising opinions about Covid-19 in the two campuses, participants are asked to answer the questions on 4 point Likert-type scales.

Response rating (X)	Frequency (F)	FX	Mean (\bar{x})
SA = 4	160	640	
A = 3	130	390	
SD = 2	60	120	
D = 1	50	50	
Σ	400	1,200	3.0

The above point results show that the respondents rightly agreed that there are polarising opinions about the pandemic with the responses of 160 respondents strongly agreed with the statement, and 130 of the respondents equally agreed. However, 60 of the respondents strongly disagreed while 50 of them disagree. The sum total of 290 respondents supported the assertion whereas 110 of the total respondents disagreed that there are no polarising opinions about the pandemic. This attracted a mean score of 3.0 which is far above the cut-off point.

Table 5: Misinformation:

Participants were asked whether there is contradictory information about covid-19 pandemic in Nigeria. The respondents are requested to respond accurately about their views concerning the issue which was analysed using 4 point Likert scale type.

Response rating (X)	Frequency (F)	FX	Mean (\bar{x})
SA = 4	130	520	
A = 3	140	420	
SD = 2	60	120	
D = 1	70	70	
Σ	400	1130	2.82

The above table shows that 130 of the respondents strongly agreed with the statement with 140 of them agreed. On the other hand, 60 respondents strongly disagreed while 70 disagreed. Therefore, 270 of the total number of the respondents agreed that misinformation abound in the covid-19 era in Nigeria while

130 of the respondents disagreed. The table has mean score of 2.82 which is above the cut-off point. Therefore, misinformation abounds in the period of covid-19 pandemic in Nigeria.

Table 6: Trust in government/public health officials handling of pandemic

Respondent were asked whether the government/public health officials are working hard to control the spread of covid-19 in Nigeria.

Response rating (X)	Frequency (F)	FX	Mean (\bar{x})
SA = 4	40	160	
A = 3	80	240	
SD = 2	145	290	
D = 1	135	135	
Σ	400	825	2.06

The table above indicates a mean score of 2.06, which is below the cut-off point of 2.50. This shows a negative response with 40 and 80 respondents strongly agreed and agreed respectively, totaling 120 respondents, while 145 respondents strongly disagreed and 135 disagreed bringing the total number of disagreed respondents to 280. By implications, that masses have lost hope in the abilities of the government and public health officials in handling COVID-19 cases in Nigeria.

Table 7: News, sources and exposure to news

The respondents were asked about their news sources and their exposure to news [Do you keep up with COVID-19 related news?]

Response rating (X)	Frequency (F)	FX	Mean (\bar{x})
SA = 4	80	320	
A = 3	90	270	
SD = 2	119	238	
D = 1	111	111	
Σ	400	939	2.35

It is obvious from the table that majority of the respondents were not bothered about COVID-19 related news as shown by the mean score of 2.35 which is significantly below the average of 2.50. 80 of the respondents strongly agreed and 40 of the respondents agreed, making a total number of 170 respondents agreed as against 230 respondents that disagreed with 119 and 111 strongly disagreed and disagreed accordingly.

Table 8: Practice of non-pharmaceutical protocols

In quest to ascertain the level of their compliance with non-pharmaceutical protocol of COVID-19, the researchers put forth the following question before the respondents [Are you faithfully observing the non-pharmaceutical protocols of COVID-19?]

Response rating (X)	Frequency (F)	FX	Mean (\bar{x})
SA = 4	50	200	
A = 3	60	180	
SD = 2	150	300	
D = 1	140	140	
Σ	400	820	2.05

Going by the available data, 50 of the respondents strongly agreed with the statement and 60 of the respondents agreed, giving the total number of 110 respondents that agreed while 150 respondents strongly disagree with 140 disagreed, making a total of 290 disagreed with the statement. The table equally has a mean score of 2.05 which is below the cut-off point. Therefore, it behooves us to state that most of the respondents are not observing the non-pharmaceutical protocols of COVID-19.

5. Discussion of findings

This paper focuses on the attitude of the students, teaching and non-teaching staffs in the two campuses of the University of Nigeria, Nsukka, and Enugu, how they complied with non-pharmaceutical protocols during COVID-19 pandemic. It was discovered that respondents are not in total support of the government economic policies because, it was harsh on them. Most of their enterprises were brought to a halt at the 1st quarter of 2020. Students were kept at home as long as the lockdown lasted, thereby delaying their academic programmes. This point is supported by Olaimat, et al (2020) in Hatabu, et. al. (2021). They said that the ongoing Covid-19 pandemic has substantial impacts on people's lives accompanied by economic damage. Hatabu et al (2020) further add that university students in Japan belong to a representative group of the young generation. The outbreak of unprecedented COVID-19 pandemic directly impedes their daily lives and activities.

There are many opposing reports about the cure and treatment of Covid-19 pandemic globally. This assertion is supported by (Fetzer, et al 2020, Rubin, et al, 2021). Some are saying that the vaccinations for COVID-19 is not effective but the manufacturer of prefixes said it is 95% effective. Others say that students (Younger ones) are at low risk for severe infection. Shumway, et al, (2021) lend credence to this statement by saying that while college students are typical at low risk for severe infection and death, spread of COVID-19 on campuses has the potential to spill over into more vulnerable communities adjacent to the campuses. Yet, the Nigerian centre for disease control (NCDC) saying that one can take more than two Jab of the vaccines while they said initially that is shouldn't be more than two jab of the vaccine. Amidst this conflicting opinions the populace is at lost, to the extent that they may not know which way to go about the cure and treatment of COVID-19 pandemic in Nigeria. More so, others claim that reaction of the vaccines is grave on those that have taken it. This statement alone instills fear in the minds of those who may want to take the jab.

The level of compliance with non-pharmaceutical protocols in the two campuses is at variant levels among the members of the communities. For instance, students are saying that university days are the most crucial period informing ones self-will, and university students are much more likely to act on their self-judgment than other members, because they feel that health and safety are personal responsibilities of individuals and were less likely to observe non-pharmaceutical protocols (Olaimat, et. al., 2020). Thus, some of the pushback to mask wearing or social distancing may be a misunderstanding of how much one's own actions may infringe upon others (Rubin & Faulders, 2021). Majority of the students in the two campuses see compliance with non-pharmaceutical protocols as an infringement of the fundamental human rights. Many of the student openly stated that observation of non-pharmaceutical protocols of COVID-19 is not convenient for them (e.g. wearing of mask, social distancing, etc).

Another interesting finding was that most of the students do not pay attention to news concerning COVID-19 pandemic. Instead of listening to news, they consistently browse/surf the internet for other programmes that are of more interest to them. Sadly, students could have watched and read different news sources digitally since they are always with their phones, but they lack the desire for news that centre on the pandemic. Research has demonstrated that news sources can have large influence on taking precautionary behaviours about compliance with non-pharmaceutical protocols. (Shumway, 2021).

Among the staff of the campuses, the degree of compliance with non-pharmaceutical protocols of COVID-19 pandemic varies as well, because people's behaviours are influenced by how they pay attention to themselves; that is self-consciousness (Fenigstein, Schuler, & Buss,2020).Private self-consciousness is a measure of individual differences considering the extent to which they pay attention to those aspects of themselves that are not directly observed by others, such as inner feelings, emotions and moods. When self-consciousness is high, people monitor themselves, act in harmony with their own will and values, and provide planning in their lives to achieve their goals. The senior colleagues – professors, senior lecturers and senior members of the non-teaching staffs are wholly in total compliance with non-pharmaceutical protocols of COVID-19 pandemic, which is attributed to their level of self-consciousness. This refers to the so-called spirit of self-denial or severity for self (Olaimat et al, 2020, Hatabu, 2020).

The essence of this work is to draw the attention of the university management to the pending dangers of COVID-19 pandemic in Nigeria, especially of the new dreadful variant of coronal virus called "Delta". Enugu state has been fortunate enough that few cases had been recorded since the inception of this virus, but we believe it is vital to learn all we can about combating this pandemic and we equally call on researchers across the globe to work on understanding of the dangers of non-compliance, so interventions can be taken against the future outbreak.

It is our candid suggestion that the university authority should find out from her student and staff why they may and may not be compliant with non-pharmaceutical protocols. If this is not possible, we suggest that surveillance team be constituted to enforce the complaint with non-pharmaceutical protocols in the university campuses. We believe doing so could be an important step for preventing the university communities from contacting the infectious disease called corona virus in future, for the saying goes, prevention is better than cure.

5. Conclusion and recommendations

The results from the survey of the campuses can serve as a framework for the university to intensify its campaign against noncompliance with non-pharmaceutical protocols of COVID-19 pandemic. Differing opinions amongst the university communities have made it difficult for them to absolutely comply with

non-pharmaceutical protocols of COVID-19 pandemic, and government roles amidst the pandemic worsen the economic hardship people have undergone. The supports people are expecting from the government during the lockdowns or self-restraint is abysmal. Lastly, public self-consciousness shows individual differences in the degree to which they pay attention to the aspect of themselves that others can observe, such as the use of face mask, hand washing/sanitising and social distancing or their behaviours toward others.

5.1 Recommendations

One major recommendation for continued and/or future implementation of non-pharmaceutical protocols, is the early engagement of communities in a pandemic or outbreak response by the university authority. The success of non-pharmaceutical protocols is largely dependent upon the willingness and compliance of citizens to adopt control measures. Therefore, the University communities should be persuaded to comply. Ideally, community engagement should begin during the preparedness stage. Listening to communities, understanding their concerns, and providing them with the right information will all be critical in ensuring high compliance and building trust. The latter is especially important as we found through key informants that government distrust and misinformation served as a barrier to implementation. Secondly, a risk-based approach should be used to implement containment and closure measures especially those that restrict people's behaviours. A risk-based approach utilises surveillance and epidemiological data to inform experts where measures should be implemented, rather than the implementation of blanket measures (e.g., national lockdown). For example, containment and closure measures can be targeted at communities with high rates of transmission rather than at the national level. Lastly, providing economic and social support to communities is crucial, especially during the implementation of measures that include the closure of schools and businesses and movement restrictions that limit the ability of individuals to access education or to leave their homes to earn a living.

References

- Akter, S. (2020). "The impact of COVID-19 related 'stay-at-home' restrictions on food prices in Europe: findings from a preliminary analysis." *Food Security*, 12: 719–725.
- Ajilore, K., Alakiti, I., and Onyenakeya, K. (2017). "College students' knowledge, attitudes and adherence to public service announcements on Ebola in Nigeria: Suggestions for improving future Ebola prevention education programmes." *Health education Journal*. 76: 648-660. <https://doi.org/10.1177/0017896917710969>.
- Benard, F. O., Akito, J. A., Joseph, I. and David, K. B. (2020). "COVID 19: The trends of conspiracy theories versus facts." *The Pan African Medical Journal*, 35(2): 147. DOI: 10.11604/pan.supp.2020.35.2.25536.
- Briscese, G., Lacetera, N., Macis, M. and Tonin, M. (2020). "Compliance with COVID-19 social-distancing measures in Italy: the role of expectations and duration." Google Scholar.
- Clark, C., Davila, A., Regis, M. and Kraus, S. (2020). "Predictors of COVID-19 voluntary compliance behaviours: An international investigation." *Global Transit* 2: 76-82.
- World Health Organization (2020). "Coronavirus disease COVID-19" <https://www.who.int/emergencies/diseases/novel-coronavirus-2019>.
- Douglas, K. M., Sutton R. M. and Cichocka A. (2017). "The psychology of conspiracy theories." *Current Directions in Psychological Science*, 26, 538–542. <https://doi.org/10.1177/0963721417718261>
- Fetzer, T. R., Witte, M., Hensel, L., Jachimowicz, J. and Ivchenko, A. (2020). "Global behaviours and perception at the onset of the COVID-19 pandemic." *National Bureau of Economic Research report*. 270082. <https://doi.org/10.3386/W27082>.

- Hatabu, A., Mao, X., Yizhou, Kawashita N., Wen, Z., Ueda, M., Takaglo. T. and Tiano, Y. (2020). “Knowledge attitudes, and practices toward COVID-19 among university, students in Japan and associated factors. An online cross-sectional survey.” *Plos One*, 1-19.
- Hartwich, F. and Massoud, H. (2020). “COVID-19 effects in sub-Saharan Africa and what local industry and governments can do” UNIDO. <https://www.unido.org/news/covid-19-effects-sub-saharan-africa-and-what-local-industry-and-governments-can-do>. Retrieved on: 10 Sep 2021.
- Konda, M., Dodda, B., Konala, V. M., Naramala, S. and Adapa S, (2020). “Potential zoonotic origins of SARS-Cov-2 and insights for preventing future pandemics through one health approach.” *Cureus* 12(6).
- Koh, W. C., Naing, L., and Wong. J. (2020). “Estimating the impact of physical distancing measures in containing COVID-19: an empirical analysis.” *International Journal of Infectious Diseases*. 100: 42–49.
- Nadelson, L., Jorcyk, C., Yang, D., Smith, M., Matson, S. and Cornell, K. (2014). “I just don’t trust them: The development and validation of an assessment instrument to measure trust in Science and Scientists.” *School Science and Mathematics*, 1; 114.
- Nigeria Centre for Disease Control (2021). Monthly report on COVID-19 pandemic in Nigeria. (2021). From: <https://www.froyiersin.org/reports/1o.3389/fubh.2021.0010/fullNCDC:12558507>. Retrieved on: October 25, 2021.
- Nworgu, R. G. (1991). *Educational research, basic issues and methodology*. Wisdom Publishers Limited.
- Okolo, B. A. (2009). *Research methods in language and linguistic*. Mindex Publishing Company Limited.
- Olaimat, A. N., Adlymat, I., Elshahoryi., N., Shabbaz; H. M. and Holley, R. A. (2020). “Attitudes, anxiety and behavioral practices regarding COVID-19 among university students in Jordan: A cross-sectional study.” *The American Journal of Tropical Medicine and Hygiene*. 103:1177-1183.
- Rubin, O. K. and Faulders, K. (2021). “Mixed messages on Masks from leaders during pandemic has caused confusion for many.” *ABC News*. <https://abcnews.go.com/US/mixed-messages-masks-critical-tool-slow-pademic-slowed/story?id=70526293>.
- Shumway, G. S., Hoper, J. D., Tolman, E. R., Ferguson, G. H., Paterson, D. and Jenseno (2021). “Predictors of compliance with COVID-19 related non-pharmaceutical intervention among university students in the United States.” *Plos One*. 1-24.
- Wothngton, R. L. and Whittaker, T. (2006). “Scale development research: A content analysis and recommendations for best practices.” *The counseling psychologists*. 34(6): 806-838.