

SYSTEMATIC LITERATURE REVIEW FACE MASK COMPLIANCE AND DETERMINANTS AMONG UNIVERSITY STUDENTS

Abstracts

Coronavirus disease 2019 (COVID-19) is a global pandemic that has emerged as one of the primary public health problems worldwide. The illness has spread quickly over the world and been classified as a pandemic on March 11, 2020. The disease is typically spread by respiratory droplets that come into touch with an individual. Promoting safety measures is one method being tried out to avoid the COVID-19 virus from spreading. Because the virus spread quickly over the world, many countries have established infection control measures and approved laws and regulations requiring individuals to wear face masks in public places. The non-pharmacological recommendation for personal protective equipment and a public health approach to stop the spread of the coronavirus in public places is to wear a mask. (2). Since it stops the infection from spreading from one person to another, wearing a mask is one of the most effective non-pharmacological solutions required to limit coronavirus outbreak in public spaces, especially for people in densely populated areas.

Methods: Systematic literature review and meta-analysis

Results: 1981 studies were retrieved from the search result, 1009 got excluded because the study titles and abstracts did not address the research questions, 72 articles were assessed for eligibility from which 29 studies were excluded because they had inappropriate study design, Studies not aimed to discuss face mask compliance were excluded, studies aimed at infection control measures and patient adherence, infection control measures at dental were excluded. Studies measuring other preventive measures were not included unless a

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face mask was also measured. As a result, five studies were included in this research.

Discussion: Among all five studies included in this review, one study Bob O Amodan et.al focused specifically on the degree and factors of adherence to and satisfaction with the covid-19 preventive measures, it was found that only a small percentage of respondents followed all of the recommended preventive measures, with adherence to mask use being particularly low. According to the authors, behaviour change programmes, particularly the usage of masks, should be expanded to improve adherence and satisfaction with preventive measures. Another study Prince Yeboah et.al. When researchers looked into the probable link between illness awareness and preventive measures, they discovered that compliance with preventive measures and willingness to take vaccines were both poor.

Conclusion: The findings of this review contribute to the growing literature supporting the compliance of preventive measures of covid-19 to limit the spread of coronavirus-19 among the population, particularly by targeting university students. There is less literature regarding the compliance of face masks among university students. Assessing the compliance of face masks is critical for effectively mitigating the spread of covid-19. Using AXIS standards, this review discovered that the quality of the examined studies was poor (Appraisal Tool for Cross-sectional Studies).

Keywords: face mask, covid-19, compliance, and determinants

I. INTRODUCTION

Coronavirus disease 2019 (COVID-19) is a global pandemic that has emerged as one of the primary public health problems worldwide. The illness has spread quickly over the world and been classified as a pandemic on March 11, 2020. The disease is typically spread by respiratory droplets that come into touch with an individual. Promoting safety measures is one method being tried out to avoid the COVID-19 virus from spreading. (1). Because the virus spread quickly over the world, many countries have established infection control measures and approved laws and regulations requiring individuals to wear face masks in public places. The non-pharmacological recommendation for personal protective equipment and a public health approach to stop the spread of the coronavirus in public places is to wear a mask. (2). Since it stops the infection from spreading from one person to another, wearing a mask is one of the most effective non-pharmacological solutions required to limit coronavirus outbreak in public spaces, especially for people in densely populated areas. (3).

Mask use has become accommodating preventive measure and precautionary strategy to stop the spread and manage the repercussions around the world as a result of the COVID-19 worldwide pandemic, which has become one of the main problems with public health. This may help to stop respiratory droplets from spreading more to the surrounding individuals or surfaces where the virus may grow. Coronavirus precaution measures protect healthy individuals from acquiring the disease and prevent those who are already affected from spreading it to others. (4).

Wearing a mask is a necessary preventive method being used to try and restrict and limit the virus's potential to spread and was seen to be successful to stop the infection from spreading from one person to another, especially for people in heavily populated areas (World Health Organization, 2020). For the purpose of halting and containing the spread of the SARS Cov-19 pandemic the health group such as World Health Organization (WHO), the Centers for Disease Control and Prevention (CDC), and government representatives have all called for a variety of non-pharmacological interventions and encouraged individuals take precaution measures necessary for the purpose of halting and containing the spread of the SARS Cov-19 pandemic. (5). One of the non-pharmacological interventions or responses to the coronavirus pandemic that was recommended and advised the most frequently was to wear a mask and it is essential to adhere to mask-wearing standards and laws in public settings as one of the mitigation techniques along with other preventative measures in public setting. The student's willingness to embrace the mandatory face masking practise as a step toward reducing the spread of covid-19 is critical in order to decrease covid-19 mortality rates. (6) Face mask compliance has been linked to a reduction in the rapid spread of covid-19. The mask wearing on campus play a major role and can aid in preventing the coronavirus from further spreading; hence, the more frequently students use masks, the better the level of environmental protection. In order to effectively manage the danger of infectious diseases like COVID-19, Widespread mask use on campuses is becoming increasingly important, and public adherence to recommendations is an essential component. Understanding student face mask compliance is crucial to determining whether or not students are willing to comply with the legally required mask wearing as a step toward limiting the spread of the illness. (7).

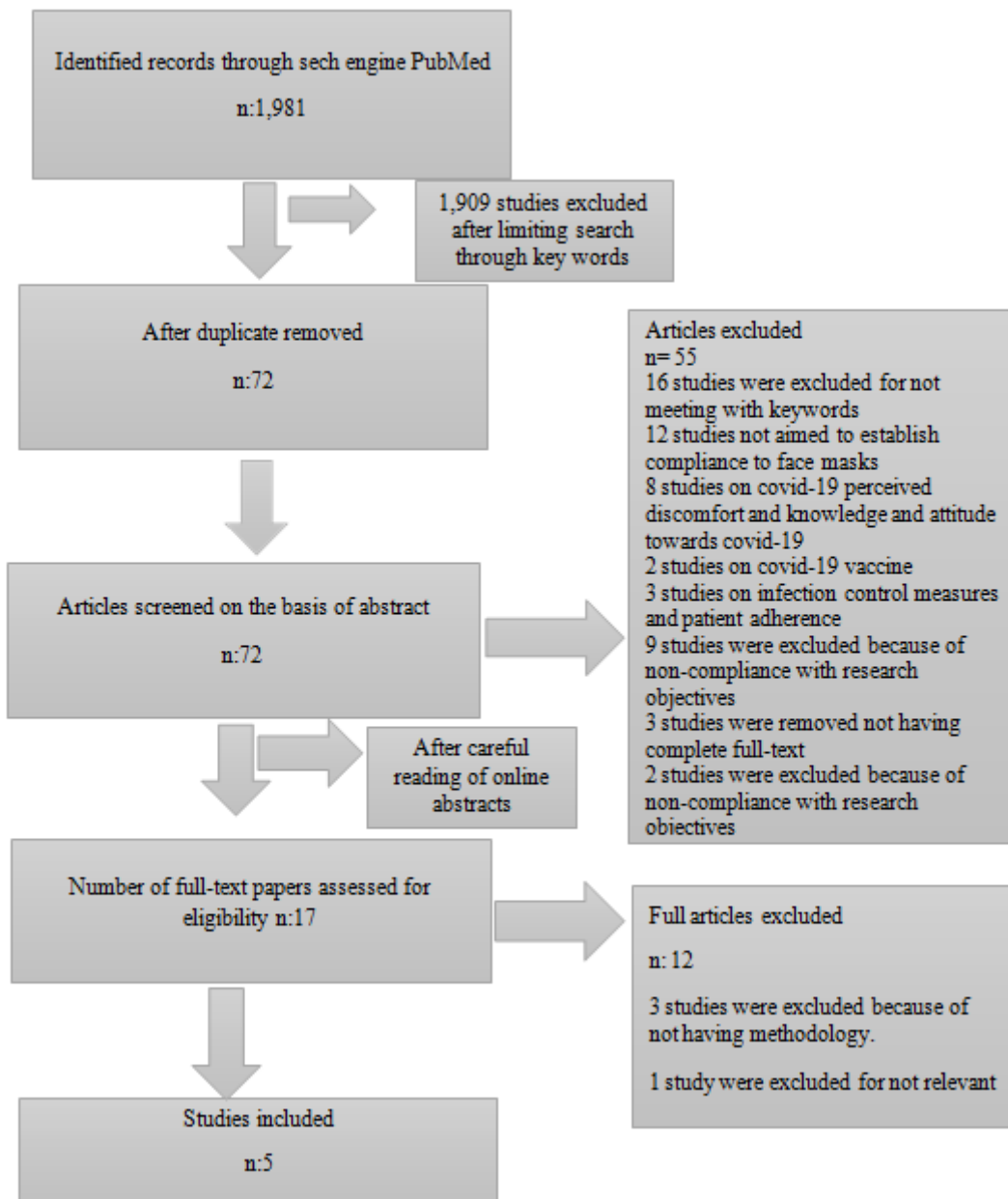


Figure1: Prisma Flow Diagram for Study Search and Selection

Search for articles: Based on the research questions above, the following keywords were formed “face mask, “covid-19”, limiting the search to “compliance” and determinants”. Online search engines (PubMed) were used for screening the existing literature. The articles were selected through using PRISMA model of systematic review. The PRISMA flowchart depicting the systematic search used in this article is illustrated in Diagram 1.1

Selection of studies to be included in the review: For consideration in this review, studies identified were screened based on the inclusion criteria. Five studies assessing face mask compliance and determinants were selected. Participants: university-level students, face mask compliance, Studies that have been published in peer-reviewed journals and are available in full text in English. If a study did not fit the criteria, it was eliminated. Studies not aimed to

discuss face mask compliance were excluded, studies aimed at infection control measures and patient adherence, infection control measures dental were excluded. Studies measuring other preventive measures were not included unless a face mask was measured.

Charting of key information: Information from the selected studies have been extracted and charted under the headings “Author(s) and year of publication”, “Country of origin”, “Aims and Objectives of the study”, “Study population and sample size”, “Methodology” and “Key findings” as demonstrated in the table below.

Extraction of data: Microsoft Excel was used to compile all of the papers found by the automated database searches. After the duplicates were removed, studies were evaluated to ensure that they matched the eligibility criteria. To aid in the comparison and synthesis of the studies, key information relevant to the study issue was methodically gathered and collated. The authors, publication date, country of origin, study design and data analysis method, pertinent outcome measures, sample size, demographic data, and findings were only some of the details gathered.

Table 1: The inclusion/exclusion criteria for selecting studies for systematic review

S. No	Criteria	Inclusion	Exclusion
1	Study design	All types of study design	None
2	Study population	University-level students	Populations who are not students and students who are not at the university level
3	Date	2016-2022	Studies published before 2016
4	Sex	Both male and females	
5	Language	English	Other languages aside from English
6	Study area	Studies assessing face mask compliance and determinants among university students	Studies assessing other preventive measures unless a face mask was also measured

Table 2: Descriptive analysis of included studies of face mask compliance

S.n	Author(s) name and year and state country	Objectives	Study population	Methodology	Results	Conclusion
1	Rupak Datta, Keith Glenn, et.al. 2021 West Haven, Connecticut	During the coronavirus disease 2019 (COVID-19) pandemic, monitor and enhance face-mask compliance among healthcare	Healthcare personnel	685 students and 675 medical and dental residents participated in the mixed-methods study.	COVID-19 and non-COVID-19 units had the same weekly face-mask compliance. The use of a multimodal intervention was linked to an increase in face-mask compliance	Despite a facility-wide mandate for universal masking, HCP compliance with face masks remained low.

		staff (HCP).			(= 0.023; P =.002).	
2	Prince Yeboah, ¹ Dennis Bomansang Daliri, ² et.al. 2021 six regions of Ghana	Determine whether there is a link between disease awareness and adherence to preventive actions.	General population	A cross-sectional study was done using an interview-structured questionnaire. n = 1560 people	In overall, the findings acquired show that Ghanaian communities have a decent understanding of the SARS-CoV-2 infection and the pandemic produced by this virus. Despite this level of understanding,	The study, which included respondents from diverse Ghanaian categories and places, reveals that the general public is well-informed about the SARS-CoV-2 epidemic. There is a poor level of compliance with preventive measures and readiness to take the vaccine..
3	Bob O Amodan, Lilian Bulage, et.al. 2020 Uganda	Assess the level of adherence to and satisfaction with the COVID-19 preventive measures advised by the government, as well as the factors that influence it.	Not specified	cross-sectional national survey questionnaire n:1726 respondent	Only 495 (29%) of the individuals followed all of the preventive measures. However, several of the specific preventive actions were followed to a high degree. Overall, 96 percent of people practised frequent handwashing, 90 percent practised physical separation, and 86 percent practised cough hygiene, whereas just 33 percent used masks.	All of the recommended preventive actions were followed by just a small percentage of respondents, and mask use was especially low.
4	Minh Cuong Duong, Hong Trang Nguyen, et.al. 2020 Vietnam	Knowledge, attitude, and practise (KAP) about the use of face masks, as well as the relationship between COVID-19 knowledge and KAP.	Students	A cross-sectional study 728	Education levels (P = 0.02) and COVID-19 knowledge (P 0.001) were found to be statistically related to face mask use attitudes. Gender (P = 0.03), regional distribution (P = 0.04), academic majors (P = 0.02), and COVID-19 knowledge (P = 0.01) were all	Vietnamese university students have a high level of KAP when it comes to wearing face masks. Most (89.7%, 653/728) participants had good knowledge, 72.8 percent (530/728) had favourable attitudes, and 76.5 percent (557/728) had good practise scores when it came to face masks.

					statistically associated with face mask use.	
5	Véronique Renault, Marie-France Humblet 2, et.al. 2020 Liege, Belgium	On a university campus, evaluate the actual deployment of five barrier gestures during face-to-face teaching activities.	Staff and students	Random observational survey n: 526	The overall weighted score for barrier gesture compliance was 68.2. (between 0 and 100). The compliance rates for the various barrier gestures were 83 percent for "Hand sanitization," 65 percent for "Wearing a mask correctly," 89 percent for "Physical distancing in auditoriums," and 44 percent for "Physical distancing outside auditoriums."	They have been shown to be useful in the management of COVID-19, as the barometer that was developed and the results of this survey allowed for a better risk assessment on campuses and identified the critical points that should be addressed in any future public health communication or education messages.

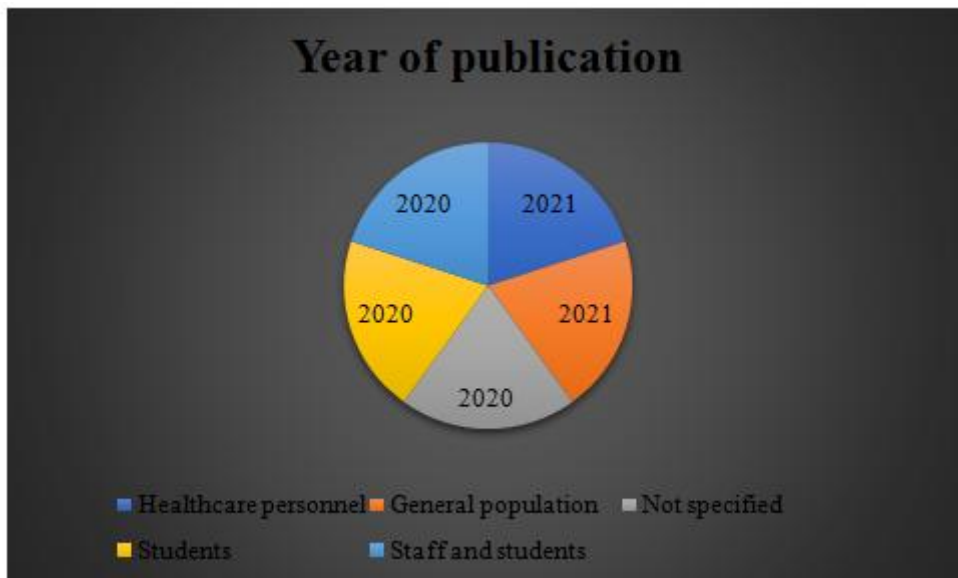


Figure 2: Pie chart Showing Distribution of Year of Publication of Included Studies

The above chart illustrates year of the publication and the study subjects of the of the included studies. The above chart shows the year of the publication of the five included studies and the study participants of each study.

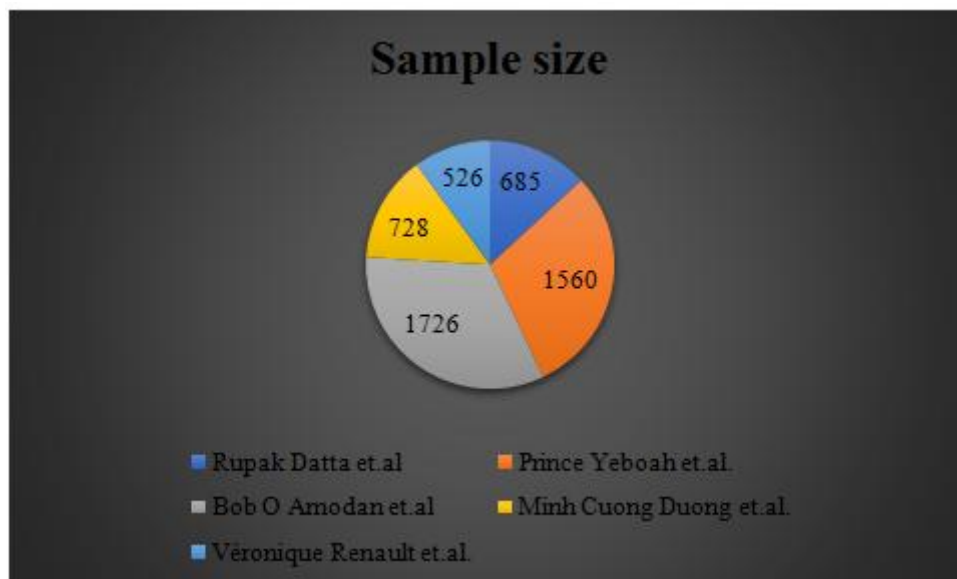


Figure 3: Pie Chart Showing Distribution of Sample Size of the Included Studies

The above chart illustrates sample size of the included studies and the first authors of each study. The above chart shows the sample size of the five included studies and the first authors name of the included studies.

II. RESULT OF DESCRIPTION OF STUDIES

1981 studies were retrieved from the search result, 1909 got excluded because of the study titles and abstracts did not address the research questions, 72 articles were assessed for eligibility from which 55 studies were excluded because they had inappropriate study design, Studies not aimed to discuss face mask were excluded, studies aimed at infection control measures and patient adherence, infection control measures at dental were excluded. Studies that were not in full text were removed. Studies that were not available were also removed. Studies measuring other preventive measures were not included unless a face mask was also measured. As a result, five studies have been included in the research.

The total number of five papers were eligible for this review. Information of selected studies was described in table 2, the information of the included studies such as topic name, authors name year of publication objectives, sample size and sampling technique, discussion, and results. One study was conducted in West Haven, Connecticut, one in Ghana, one in Uganda, one study was conducted in Vietnam, and one in Belgium. One study focused specifically on the degree of adherence to and satisfaction with the covid-19 preventative measures, as well as the factors that influence it. As well as implying that behaviour change programmes, including the usage of masks, should be stepped up to improve adherence and satisfaction with preventive measures. A population's accurate use of face masks was measured in one study. Another study attempted to demonstrate a link between disease awareness and adherence to preventive interventions. One research concentrates on many control measures put in place to prevent the spread of covid-19 on college campuses. During

the coronavirus disease 2019 (COVID-19) pandemic, one study attempted to evaluate and improve face-mask compliance among healthcare staff (HCP).

III. QUALITY ASSESSMENT

Quality assessment of studies using AXIS guidelines (Appraisal Tool for Cross-sectional Studies)

From five studies that were included in this systematic review, 4 were cross-sectional study which, for quality assessment (QA) purpose, the AXIS guidelines were used to evaluate research papers in a structured manner and to determine the study's quality. AXIS tool examines survey articles in terms of their introduction, methodology, result, discussion and conclusion and other (funding and conflict of interest, and consent). The aims or objectives are scored one each in introduction (total 2 scores), similarly, appropriateness of study design, justification of sample size, generalizability of sample frame, representativeness of sample, definition of target population, validity, reliability, non-responders measures, explanation of statistical methods and statistical significance individually merit one score in methodology (total score of 10) Result carries 5 marks which is determined based on clearly

Explanation of results, concerns about non-responders, measurements of non-responders, consistency of results and the compliancy with methodology. Furthermore, whether the study's discussion and conclusion were in accordance with results and whether it mentioned the limitations of the study a total score of 2 was assigned for each respective part. Finally, one score is given if either the funding or conflict of interest was mentioned, besides, one extra one mark was allotted for the consent form for respondents in the stud. In the end, the the maximum score a study can receive is 21, with 9 being the cut-off for a study to be regarded qualified for this article. The outcomes are shown in the table below.

Table 3: Quality assessment of cross-sectional studies using AXIS guideline

Author (s) name & year of publications	Introduction (2)	Methods (10)	Results (5)	Discussion (2)	Others (any funding, source or conflict of interest) (2)	Total (21)	Quality assessment
Rupak Datta et.al. 2021	2	5	3	1	0	11	Medium
Prince Yeboah et.al. 2021	2	4	4	1	1	12	Medium
Bob O Amodan et.al. 2020	2	4	3	1	1	11	Medium
Minh Cuong Duong et.al. 2020	2	5	4	1	0	12	Medium
Véronique Renault et.al. 2020	2	8	4	1	1	16	High

QA: 1-7 low 8-14 medium, and 15 to 21 is high (Seo, HJ., Kim, K.U. Quality assessment of systematic reviews or meta-analyses of nursing interventions conducted by Korean reviewers. *BMC Med Res Methodol* 12, 129 (2012). <https://doi.org/10.1186/1471-2288-12-129>

IV. DISCUSSION

Among all five studies included in this review, one study Bob O Amodan et.al focused Low proportions of respondents responded to all of the recommended preventive measures, and adherence to mask use was especially low, according to the degree and determinants of adherence to and satisfaction with the covid-19 preventive measures. According to the authors, behaviour modification programmes should be sped up to promote commitment and comfort with preventive measures, particularly the usage of masks. Some other study, conducted by Prince Yeboah et al., looked at the probable link between illness knowledge and preventive measures, and found that compliance with preventive measures and willingness to take vaccines was poor. AXIS guidelines were used to evaluate the quality of the review studies (Appraisal Tool for Cross-sectional Studies). The quality of these studies was considered to be poor in this review. With the exception of one study, which received a high-quality score, the majority of the studies received a medium rating. (8). Although the benefits of wearing a mask are well established, there is little or no research and information about how well university students adhere to face masks. Face mask compliance is linked to a reduction in the rapid spread of covid-19, and face masks are seen to be one of the most important non-pharmacological preventive methods for covid-19 prevention. It is crucial to practise effective face mask compliance in public settings such as campuses. Wearing masks is an important step in reducing transmission and saving people's lives. Masks can be used to safeguard healthy individuals, restrict further transmission, or both, regardless of the type. (9). Despite the importance of wearing a face mask and other preventive measures, little research has been done on them. This study discovered that after performing a quality assessment using the AXIS guidelines (Appraisal Tool for Cross-sectional Studies), even studies reporting on preventive measures have poor quality and need to be improved in order to succeed in efforts to limit covid-19 table 4. The student's willingness to embrace the mandatory face masking approach as a step in lowering the spread of covid-19 is critical in limiting covid-19 fatality rates. (10). Encourage people to take preventive measures is one of the techniques being tried to stop the spread of COVID-19 infection. One of the most significant techniques is to wear masks in public locations such as campuses. One of the most essential methods for slowing the spread of COVID-19 infection is efficient compliance with face masks in public areas, such as campuses. (11).

V. LIMITATION OF STUDY

There is limited research on university students' compliance with face masks.

Using AXIS standards, this research discovered that the quality of the included reviewed studies was not adequate (Appraisal Tool for Cross-sectional Studies). Only one study was of good quality as a consequence.

VI. CONCLUSION

The findings of this research add to the expanding body of evidence supporting the use of covid-19 preventative strategies to reduce the spread of coronavirus-19 in the population, particularly among university students. There is limited research on university students' compliance with face masks. Assessing the compliance of face masks is critical for manner in order to maintain the spread of covid-19.

VII. RECOMMENDATION

Despite the importance of these precautionary measures in limiting the spread of covid-19, this study found that compliance with preventive measures, particularly face mask compliance, was low. This study also discovered that, after doing a quality evaluation using the AXIS guidelines (Appraisal Tool for Cross-sectional Studies), even studies reporting on preventive measures have poor quality and need to be improved in order to succeed in attempts to diminish covid-19. It is critical that more research should be carried on face mask compliance and other preventive measures; nevertheless, there is less data on face mask compliance, particularly among students. (12). It could have an impact on the fight against covid-19 and add to the public health burden of chronic disorders. In order to control and prevent the spread of the novel coronavirus illness 2019 (COVID-19), as well as to bolster efforts to limit COVID-19. There is a pressing need to look into Covid-19 compliance, as well as other preventive measures, and to improve strategic effective communication. (13)

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