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COVID-19 is a Conspiracy Disease? Diagnostic Mental Models and Students' Cognitive Abilities

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Abstract

Countless research has been published on the impact of covid-19 on improvements in teaching techniques, activities, and motivational beliefs. Most research refers to a human's response before learning without testing students' comprehension and literacy linked to covid-19. This study adopted a qualitative approach, with a questionnaire serving as the primary research tool. Alternatively, the current study looks into students' cognitive and portrays their mental model of COVID-19. At the Islamic University of Lamongan, 30 students from the science education department and 30 students from the environmental health department took part. Students are chosen as transformational leaders and liaisons between society's academic and social environments. The researchers gather data based on an open-ended assessment that evaluates the concepts, causation, methods, and strategies that must be implemented to prevent the transmission of COVID-19. Participants completed questionnaires prepared for educational purposes before and after learning. Inductive and iterative investigation of the descriptions of students' answers revealed cognitive outcomes and mental models. Each questionnaire form is then checked for validity using the SPSS v24 program. The authenticity of the questionnaire responses for each questionnaire> r count (N = 60), indicating that each question is valid, whereas the reliability test using Cronbach's Alpha provides a score of 0.78> 0.60, indicating that the questionnaire employed is trustworthy. Regarding educational, cognitive processes, the analysis shows that some colleagues believe that COVID-19 is a conspiracy, while others need to add sufficient scientific literacy to validate that COVID-19 is a disease. Even after learning, they can only make general ways to mitigate the propagation of COVID-19. The findings for student mental models revealed considerable changes in clarity and coherence, such as models at levels 1 through 5 with the highest student mental models. This study culminates with the implication that students require scientific literacy to effectively communicate about COVID-19 and check out false information in public.

Keywords: Covid-19; Mental Model; Students' Cognitive

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INTRODUCTION

Indonesia is still suffering from the Coronavirus, with the number of individuals exposed to Covid-19 continuing to rise and the number of fatalities escalating. The increase in the number of patients happened quickly, necessitating rapid treatment. From mid-June to July 2021, positive cases went up again. On July 16, 2021,

confirmation data from the health department on the spread of COVID-19 in East Java revealed 7,832 confirmed positive cases with 2,290 recovered cases (Pemerintah Provinsi Jawa Timur, 2021). This data is collected from different areas in East Java, including Lamongan, which reports that an additional 142 people were exposed, 36,011 people were treated, five people recovered, and seven people died (Erfinanto, 2021). Due to the huge number of confirmations of increased community exposure in East Java, the government declared the region to be a very high-risk area for acquiring COVID-19, designating East Java as a category 4 Covid-19 distribution area.

The national and local governments have attempted to limit Covid-19 exposure (Djidu et al., 2021; Lestari, 2020). The government adopted a PPKM-Micro policy (Enforcement of Restrictions on Community Activities) in the community, later amended to PPKM level 4 in several locations, particularly in the Java-Bali area (Ashraf, 2021). The government claims the strategy effectively decreases the corona virus's peak and spread. There is a tightening of regulation in society at PPKM-Micro/PPKM Level 4, with the main objective of physical separation or keeping a distance from each other by limiting mobility and remaining at home (Brodeur et al., 2021; Yuzulia, 2021). COVID-19 transmission is estimated to be decreased as a result of this policy.

The Coronavirus (Covid-19) is a zoonosis that can be spread between animals and humans (Jalongo, 2021; Yoshikawa et al., 2020). Coronavirus disease is a condition caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) syndrome, which affects the respiratory system and can cause significant breathing difficulties (Moura et al., 2020). The symptoms of Covid-19 infection range from basic (medium) to septic shock (severe) (Kazmi, 2020). Fever, dry cough (some with phlegm), and shortness of breath are symptoms observed in the phenomenology. On the other hand, they may not be present in some cases, particularly in the elderly or immunocompromised. Severe acute respiratory infection (SARI) symptoms may appear under certain circumstances. SARI is defined as an acute respiratory infection with a history of fever (38°C) and cough that develops within 10 days and necessitates hospitalization. Even if there is no fever, a viral infection might still be present (Griffiths et al., 2021). Covid-19 infection can happen instantaneously via droplets from the mouth or nose and when the patient coughs, sneezes, or keeps in touch (Brodeur et al., 2021; Yoshikawa et al., 2020).

Breaking the chain of Covid-19 dissemination requires a high degree of awareness and information from all members of society, particularly students, who serve as home life's spearhead. It is critical to be aware of measures to avoid Covid-19 infection to keep the number of diseases from escalating (Abidah et al., 2020; Ramlo, 2021). Understanding and expertise are critical in developing ways to combat the Covid-19 disease. During the Covid-19 Pandemic, education from all tiers of government, the community, and even schoolchildren and students, was required to guide conduct to avoid the spread of the increasingly common Covid-19 disease (Yuzulia, 2021). Access to information gained by the public has a significant impact on awareness of Covid-19 features. Other than that, the development of misinformation contributed to the communication gap in the lead-up to Covid-19 (Elmer et al., 2020). The flow of information in today's era of social media can come from any direction and is impossible to control (Moura et al., 2020). The public has easy access to a variety of information regarding the disease. However, the accuracy

of the data cannot be confirmed, and the public is unwilling to do so. In reality, incorrect information leads to incorrect knowledge.

During the Covid-19 disease, the dissemination of fake news about health information resulted in a lot of negative reputations (Rahayu & Sensusiyati, 2020). Correct and comforting information will undoubtedly be more beneficial to the community, but inaccurate and alarming information will add to the community's fears and worries. As a response, explicit health literacy on Covid-19 is essential for the wider public. People are terrified and anxious due to hoax news, which leads to a decrease in public health and an increase in crime (Khlaif et al., 2021). In the Covid-19 pandemic context, the most frequently disseminated information is data on the risks of Covid-19 and how to prevent its spread. Suppose public awareness is not balanced with wisdom and subjectivity in absorbing information. In that case, the knowledge acquired can become a faulty understanding, culminating in a terrible stigma towards anyone who comes into contact with Covid-19 (Rahayu & Sensusiyati, 2020). Many people are familiar with the issue of Covid-19, but many are oblivious to the correlation between COVID-19 and SARS-CoV-2 (Yuzulia, 2021). Many people believe SARS-CoV-2 is a different illness (Moura et al., 2020). Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) causes Coronavirus Disease 2019 (COVID-19), an acute respiratory disease with inflammation of the lung parenchyma (Archila et al., 2021).

Their degree of health literacy influences public perceptions regarding the Covid-19 disease (Archila et al., 2021). Health literacy is critical for addressing various health issues, including the Covid-19 disease (Ferdiansyah et al., 2020). Covid-19 was initially reported in Wuhan, China, but many overestimated the epidemic, and most people dismissed it as a deadly pandemic (Moura et al., 2020). This occurrence demonstrates that Indonesia's public health literacy remains poor. People with excellent reading skills will find it easier to process and organize incoming and exciting data (Lestiyanawati & Widyantoro, 2020). However, according to Ramlo's (2021) research, individuals still have poor knowledge of the covid-19 virus's transmission, necessitating substantial government or authority education. Aside from that, Lestiyanawati & Widyantoro (2020) reported that 30% of people at the regional level must filter out pertinent information before spreading COVID-19 material, ensuring that the information provided is not fake. According to the findings of pre-research data on the degree of awareness of students at the Islamic University of Lamongan, 71% of graduates still had less understanding of the Covid-19 disease. These youngsters only know that the covid-19 virus is assaulting the universe, and that the only way to deal with it is to keep a considerable distance, wash their hands, and wear masks. This is because of a lack of patient knowledge of Covid-19; these youngsters receive government demands and are oblivious to the corona virus's intricacies.

Per the findings from Oleksy et al. (2021), the covid-19 coverup can occur in persons who don't even have individual control over information received through all the media, but this is not the case with this study, which seeks to discover the perspective of covid-19 from students with extensive knowledge in the field of knowledge. In researching covid-19, consider nature and the surroundings. Subsequent research from Marinthe et al. (2020) indicates that the mentality of the general public who knows how to prevent the spread of covid-19 non-normatively causes misunderstanding, but it differs from this study, which shows how to prevent

covid-19 scientifically (systemically and according to scientific studies) to know the thinking patterns of students with sufficient knowledge. Furthermore, the most recent research from Varela et al. (2020) states that junior high school students have the wrong mental model related to environmental issues such as global warming as a result of an inappropriate learning system, but this study wants to prove that environmental issues such as covid-19 can be educated well when the learning system is well organized so that students will be able to accept and think of ways to reduce the negative impact of environmental issues that occur. Based on the dearth of research on the mentality of someone who is theoretically familiar with Covid-19, namely students, as previously indicated, this study intends to determine the mental models possessed by students in domains important to Covid-19. This research is innovative in the sense that it diagnoses a person's mental model connected to Covid-19, who should have a good mentality since they have a scientific background relevant to the idea as well as a clearer and better explanation at the college student level. However, even if someone with a scientific or academic qualifications related to or considered relevant to COVID-19 has a good mental and cognitive model, this research is very important to do in hopes to identify out the problem and solve it as soon as possible in order to avoid distrust in an agency education and in society.

METHOD

Qualitative methodology was adopted by employing case study methodologies in this research to describe events that become issues that occur in everyday life (Varela et al., 2020). Case study approaches can help increase cognitive comprehension through small-group discourse (Darabi et al., 2010).

Research subjects

This study was carried out in the Lamongan region of East Java, Indonesia, more specifically at the Islamic University of Lamongan. The research subjects included 30 undergraduates from the Science Education department and 30 undergraduates from the Environmental Health department (a more specific description can be seen in Table 1). The university recommended the research subjects based on their link to disaster mitigation and the issue of the Covid-19 catastrophe that might be taught more scientifically in the Science Education and Environmental Health department. Furthermore, the two departments were chosen based on the accreditation of the Science Education department and environmental health, both of which have the "Good" predicate from the Indonesian government.

Table 1. Research Subjects

Department	Accreditation	Gender		Average Age (years)
		M	F	
Science Education	Good	3	27	22.3
Environmental Health	Good	2	28	22.5

Table description: M = Male, F= Female

The research strategy was focused on classroom learning, with four sessions exploring learning themes and one meeting measuring students' beginning conditions (pre-test) and ending circumstances (post-test) before and after special treatment by researchers. The primary focus of the current research will be Covid-19 that will be discussed in terms of its causes, viruses and their morphological structures, human

antibodies, the influence of viruses on people, and the impact of Covid-19 on the environment and ecosystems. Table 2 summarizes the learning process and learning objectives.

The research subject is taught in two classes, each on the prescribed study schedule; the learning activities are led by the same instructor, who has received training from the research team. The previous research team created and constructed learning materials (syllabi, lesson plans, student modules, research instruments, and learning media) that were sent to all research subjects without distinction.

Data collection

The information was analyzed through a questionnaire technique (open-ended questions). The information was analyzed through a questionnaire technique (open-ended questions). The current research paper needed to explain the students' abilities in more detail without limitations on specific points of view, but researchers still had an assessment rubric using specific keywords in each answer given by students (Grant et al., 2015; Lin et al., 1999). The researcher devised five questions to ascertain students' mental models, with the aims or indicators of each question detailed in Table 3.

Table 2. Research learning topics.

Meeting	Learning Topics	Objectives Learning	Content
1	Pre-test	Knowing the students' starting point	-
2 - 3	Causes of covid-19, the virus, and its morphological structure	Recognizing the primary causes of covid-19, identifying and comprehending the covid virus-19, and comprehending the covid-19's morphological structure.	Virus, coronavirus
4	Human antibodies	Identify and comprehend human antibodies; comprehend how human antibodies function against foreign things that enter the human body (viruses)	Human antibodies and their mechanisms
5	The effects of viruses on humans, as well as the effects of covid-19 on the environment and ecosystems	determining the influence of covid-19 on individuals, the environment, and ecosystems	Impact of the covid-19 virus: health, social and environmental
6	Final test (post-test)	Knowing the students' final point	-

Table 3. Questionnaire questions and their objectives (adapted by Varela et al., 2020)

No	Question	Objective
1	What exactly is Covid-19? Make an- effort to explain in your own words.	Identifying one's grasp of covid-19 and analyzing the variety of one's point of view.
2	What is the cause of Covid-19?	Identifying the source of a catastrophic covid-19 phenomenon.
3	Is covid-19 the same as SARS-CoV-2 (Severe Acute Respiratory Syndrome Coronavirus)? Why?	To assess students' analytical abilities in differentiating between covid-19 and SARS-CoV-2.
4	Using this graphic, try to depict the transmission of the SARS-CoV-2 virus to people. (You are permitted to include photos related to/support the drawings you use, but you are not permitted to decrease the number of images given.)	To identify students' many beliefs regarding the causes and spread of SARS-CoV-2 and its processes in the human body. The image created by the student represents the student's mental model.
5	What strategies can you recommend to decrease the transmission and detrimental impact of the SARS-CoV-2 virus on individuals and the environment?	To assess students' skills to propose solutions that would reduce the negative impact of the COVID-19 tragedy on people and the environment.

Data analysis

This study collected two types of data from students via questionnaires: the first was data on students' cognitive capacities or knowledge of topics, and the second was data on students ' mental models before and after receiving particular research therapy. The first analysis was conducted based mainly on data collected by reading the responses from each student and evaluating the students' first comprehension of covid-19, followed by analyzing the keywords used in each student's replies (Marthoenis et al., 2021; Varela et al., 2020; Yuzulia, 2021). The categories used were established separately by the researcher to improve inter-rater validity and demonstrate the degree of triangulation of the qualitative study done by the researcher. To determine the consistency of the assessment (coding), and the reliability coefficient of each ratter, the assessment (coding) of each ratter is compared (Varela et al., 2020). The reliability findings revealed that 83% of the evaluations between ratters were possible for reliability. In contrast, researchers and ratters would review others who did not match the level of accuracy via an agreement.

The secondary data analysis was modified from the Varela analysis approach (Varela et al., 2020) by extensively examining the responses to each questionnaire and connecting them to (conceptual) knowledge, which would subsequently be referred to as mental models or explanatory models. First exams are given to data to identify their initial mental models, which are then evaluated for the students' final examinations. Because the mental model in this study is unique, particular assessment

indicators, such as the level of sophistication of student questionnaire replies, must be established (Darabi et al., 2010; Varela et al., 2020; Yuzulia, 2021).

RESULTS AND DISCUSSION

The conclusions of this study are based on data analysis methodologies, namely the researchers' investigation of students' cognitive comprehension and mental models (explanatory models). Because this study employs a questionnaire (open-ended questions), so it is conceivable for a student to respond to each question withequal terms. Each discovery is explained as follows:

Cognitive results of knowledge pertaining to covid-19

Question 1: What exactly is covid-19? Make an effort to explain in your own words. Researchers get answers to question 1 in four categories (Table 4). The study of answer categories is based on correct, partly correct, wrong, and no responses. Prior to training, the percentage of accurate responses was 20%; after learning, it improved to 70%. The correct answer is derived from keywords extracted from student responses; four keywords must be present: virus, illness, Sars-cov-2, and respiratory.

According to the findings of the pre-learning research, 65% of students characterized covid-19 as a plague and a virus that targets the respiratory system. These findings are consistent with research from Khlaif et al. (2021), which claims that most students are still unsure what covid-19 is before getting covid-19 learning.

Table 4. Question No. 1 category answer

Categories	Example of Student Answers	Percentage of Answers (%)	
		Pre-Test	Post-Test
True	A disease caused by the Sars-cov-2 virus which attacks the human respiratory system and can be highly contagious.	20	70
Partly true	A viral respiratory disease	50	30
False	A conspiracy of the rich	20	0
No answer	-	10	0

Question 2: What is the cause of Covid-19? The researcher's analysis of the responses provided three types of answers: correct, wrong, and no answers. The right answer was acquired when the student was able to write down the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) virus. Nevertheless, this response was classified as incorrect and did not answer. Prior to actually learning, 20% of students had accurate answers, and after learning, 80% had correct answers, while the remaining 20% had erroneous or no responses. According to a study by Powel (2021) (Powell & Meyers, 2021) students' general failure to identify the aetiology of covid-19 is consistent. According to the study, people preferred to associate covid-19 as a sickness and a source of disease, despite the fact that the term "severe acute respiratory syndrome coronavirus 2" (SARS-CoV-2) is less recognizable to them.

Question 3: Is covid-19 the same as SARS-CoV-2 (Severe Acute Respiratory Syndrome Coronavirus)? Why? This question's responses are classified into four types: correct answers, partly correct answers, wrong answers, and no answers. Prior to the study, several students on the research team felt sars-cov-2 and covid-19 were distinct, but the difference was that they thought sars-cov-2 was a disease comparable to bird flu. The proportion of peer feedback is shown in Table 5.

Table 5. Question No. 3 category answer

Categories	Example of Student Answers	Percentage of Answers (%)	
		Pre-Test	Post-Test
True	Different, because Sars-cov-2 is a virus that causes covid-19	10	80
Partly true	Different, because Sars-cov-2 2 is a disease such as bird flu/swine flu so it is similar to covid-19	40	5
False	Same, only different terms.	40	15
No answer	-	10	0

Question 4: Using this graphic, try to depict the transmission of the SARS-CoV-2 virus to people. (You are permitted to include photos related to/support the drawings you use, but you are not permitted to decrease the number of images given). Based on the researcher's examination of the responses collected, various types of replies are created. Regarding student responses during the pre-test, 43 percent of students indicated that the spread of the Sars-cov-2 virus was caused by touching objects containing the virus, 10 percent indicated that the spread could occur in the air. Others indicated that the spread could occur through other media. The percentage of responses to question No. 4 might be seen in Table 6.

Table 6. Question No. 4 category answer

Categories	Percentage of answers (%)	
	Pre-test	Post-test
Touching objects	43	30
Wiping the face	27	60
Air	10	
Not wearing a mask	20	15
Any medium (water, air, touch)	0	20
No answer	0	0

The response categories acquired from students are the outcome of different social, electronic, and newspaper advertising produced by different parties. According to the Yoshikawa (2021) (Yoshikawa et al., 2020) study's findings, the most common method of spreading the sars-cov-2 virus was washing the face with dirty hands or harboring the sars-cov-2 virus. The high proportion of sars-cov-2 virus transmission is also induced by casual handling of items without washing hands before continuing with normal activities.

Question 5: What strategies can you recommend to reduce the transmission and detrimental impact of the SARS-CoV-2 virus on individuals and the environment? The findings of the study of classroom observations There are numerous answer categories, which may be seen in Table 7.

Table 7. Variations in answer to question No. 5

Categories	Percentage of answers (%)	
	Pre-test	Post-test
Handwashing with soap	42	53
Making use of masks	25	25
Maintaining a minimum of 1-2 meters	10	5
Significantly reducing collection operations	17	12

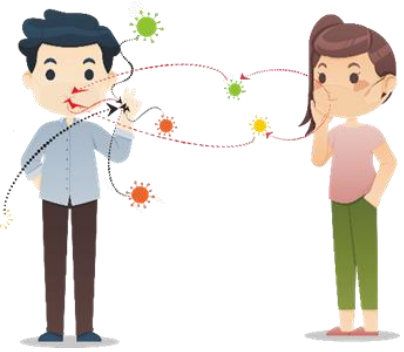
Categories	Percentage of answers (%)	
	Pre-test	Post-test
There is less eating together.	10	5
No answer	0	0

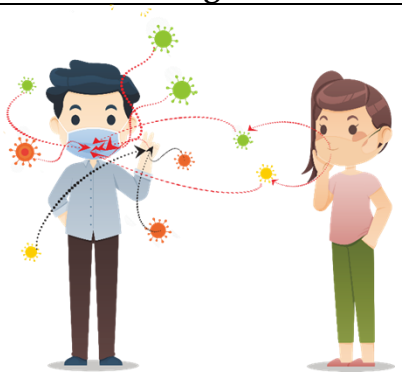
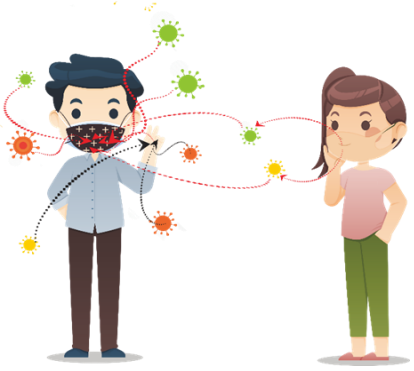
According to the evaluation results in the Table 7 above, there is a significant change in the category of washing hands with soap, and it's because students' already recognize the implications of washing hands with soap, which can alleviate and kill the sars-cov-2 virus.

Findings from mental models (explanatory models) concerning covid-19

Based on the data analysis results, five tiers of mental models are derived from student responses. A classify level is a mental structure focused primarily on the qualities or key components of a model picture that students' have defined. Level 1 is the least, and level 5 is the greatest, indicating students' mental competence after learning or therapy. Based on the stages attained, the following mental model has been developed in Table 8.

Table 8. Levels of students' mental models

Level	Description	Figure
1	Students' characterize COVID-19 as a conspiracy that is not spreading and is only restricted to fake information. As a result, this level is classified as the lowest level.	
2	At this level, students describe the method of transmitting the Sars-Cov-2 virus via an indirect intermediary, such as holding things infected with the Sars-Cov-2 virus, which subsequently enters someone's mouth and permits the Sars-Cov-2 virus to be transported into the human body.	
3	At this level, the ability to decode two methods in which the Sars-cov-2 virus can be transmitted from one person to another. The first is an indirect approach, whereas the second is a direct method. The indirect approach is proposed at level 2, but the sensitivity analysis is a splash of saliva that unintentionally slips out if somebody is talking to anyone else. However, at this level, students have not accurately defined the purpose of masks and the percentage of people who wear cloth masks or medical masks.	

Level	Description	Figure
4	This level includes students who can explain the transmission of the sars-cov-2 virus using direct (level 4) and indirect (level 3) techniques, as well as the function of medical masks and fabric masks (1 layer) worn by someone.	
5	At this level, students may describe how the sars-cov-2 virus spreads through various media such as items, food, air, masks, or direct touch. Students' may also discuss the relevance of vaccinations and the use of 2-layer masks, specifically fabric masks on the outside surface and medical masks on the internal lining, while using a mask outside the house.	

Based on their level, level 1 students have very reduced mental, procedural, and literacy abilities. Students have not been able to properly examine the events or phenomena of COVID-19 and have non-scientific perceptions (Yuzulia, 2021). Levels 2 and 3 demonstrate that students have literacy and procedural knowledge about covid-19 and its transmission, but students' are unable to articulate how to halt the spread of the sars-cov-2 virus (Smyth & MacKinnon, 2021; Varela et al., 2020). Students' at levels 4 and 5 can exhibit cognitive and procedural abilities relevant to the transmission and prevention of the Sars-cov-2 virus. Because covid-19 has not demonstrated a decline in the spread, especially with the rising variety of the sars-cov-2 virus from the initial version to the lambda variation emerging from Peru, the ability to assess the effectiveness of masks to prevent and protect anyone is an essential talent (Lin et al., 1999; Van de Velde et al., 2021; Yank et al., 1991).

The accompanying report consists of an examination of the proportion of students who answered each level of student mental models linked to COVID-19, both it's spread and prevention.

Table 9. Percentage of students' mental models level

Mental model level	Percentage (%)	
	Pre-test	Post-test
1	20	0
2	40	20
3	20	30
4	15	30
5	5	20

Surprising results were reached for students' subjects from a scientific household that was thick with knowledge based on the level table of the student's mental model above. Even though the group of students who attended level 1 had a substantial shift

in mentality after receiving the research program, the proportion of pre-test at level 1 still reveals that people believe covid-19 is a conspiracy and has no influence on themselves (Douglas, 2021; Miguel Landa-Blanco, Agurcia, Elizabeth Andino Rodriguez, 2020; Pisl et al., 2021). Students' lack of understanding is accompanied by a lack of scientific literacy concerning the sars-cov-2 virus, resulting in high misconceptions and even possible misunderstandings among students', which are believed to contribute to the complexity of education in public (Douglas, 2021; Elmer et al., 2020; Pisl et al., 2021). However, students' improvement in scientific cognitive knowledge explains the change in mentality required to educate the general public. This is because students are agents of change in society to ensure that others do not encounter misunderstandings and even misunderstandings about COVID-19 (Hantzi et al., 2019; Nagakumar et al., 2021; Yamamura & Tsustsui, 2021). Students must be provided with accurate and scientific literacy materials to support cognitive understanding before entering the larger community, so it is hoped that students will have at least the main provisions of at least the right concepts and develop creative ideas to educate on COVID-19 mitigation and disseminate information (Archila et al., 2021; Pisl et al., 2021; Rahmawati et al., 2021). Without compulsion, Covid-19 facts (Yuniarto et al., 2021).

Students are at the forefront of COVID-19 mitigation because they are intelligent intellectuals or scientific people who can minimize conceptual mistakes and fake news circulating in society (Ashraf, 2021; Septaria et al., 2020). Many sars-cov-2 virus variations have been discovered, the most recent being the lambda form (Elmer et al., 2020). These many variations demonstrate that the virus can transform while still infecting individuals at a crucial level. Thus, enormous education is required with the assistance of students to educate the larger population (Douglas, 2021; Yoshikawa et al., 2020; Yuzulia, 2021). Because the sars-cov-2 virus has a vast number of variations, the method of transmission, the critical level, and even the symptoms that arise in someone who is exposed to it change, the public must be aware and prepared so that the sars-cov-2 virus does not spread further (Brodeur et al., 2021; Douglas, 2021)

Public education and mitigation are challenging, especially with the adoption of different Indonesian government policies aimed at limiting human movement but cognitive education and scientific literacy in relation to COVID-19 are very limited (Abidah et al., 2020; Mailizar et al., 2021; Rahayu & Sensusiyati, 2020). This is where education, particularly education in the scientific areas, plays an essential role in improving scientific literacy and education for the larger community (Archila et al., 2021; Pisl et al., 2021). Embracing community mobility can indeed be an alternative to eliminating the SARS-CoV-2 virus, which is presently high. However, cognitive learning will be even more important in preventing, acting when exposed, and planning actions to care for each other after being exposed to a Sars-Cov-2 virus in the body.

CONCLUSION

This research diagnoses students' cognitive and mental capabilities in relation to the Covid-19 outbreak in Indonesia. Students are identified as those whose academic and scientific backgrounds should not guarantee a high level of cognitive abilities and correct mental conceptions. Students' cognitive capacities are at the comprehending level, and they have a weak mentality, as evidenced by being mentally influenced by misleading information. Structured learning, giving scientific data, and strengthening

student literacy skills can all help students enhance their cognitive abilities and mental models in relation to COVID-19. Students with excellent cognitive skills and a positive outlook can assist the Indonesian government in educating the public about proper COVID-19 mitigation and debunking false information.

RECOMMENDATION

Future research is expected to have a broader scope of students' mental and cognitive models that can be studied from family and environmental backgrounds.

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DECLARATION OF INTEREST

The author/s declare no conflict of interest.

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