Original Article

The effect of internet-based education to improve knowledge and practice toward COVID-19 prevention among community volunteer in rural area of West Java, Indonesia

Taryudi¹* | **Heri Firmansyah²** | **Astri Mutiar³** | **Heni Purnama⁴**

1,2Department of electronic, Faculty of Engineering, Univeristas Negeri Jakarta, Indonesia

3,4 Department of Nursing, Sekolah Tinggi Ilmu Keperawatan PPNI Jawa Barat, Bandung, Indonesia

*contact
taryudi@unj.ac.id

Abstract

Aims: This study aimed to determine the effect of internet-based education to improve knowledge and practice toward COVID-19 prevention among community volunteer in Indonesia.

Design: This study is a quantitative study using the queasy-experimental two group pre-posttest design.

Methods: The intervention in the form of internet-based education was offered to respondents in 5 sessions (45 minutes each meeting) in 3 weeks in the form of discussions utilizing power points and applications regarding COVID-19 prevention. the respondents are those who meet the inclusion criteria during the study: age over 18 years old, able to communicate well, not have visual and hearing impairment, can read and write, willing to be involved in research, and have access to android gadgets.

Results: The number of samples in this study were 150 respondents consisting of 84 respondents (56.4) male and 66 respondents (44.0) female. Of these 150 respondents, 75 respondents were in the intervention group and 75 respondents were in the control group. COVID prevention knowledge before and after the internet-based education intervention increased significantly from 2.02 (SD=1.25) 2 to 3.45 (SD=1.31) with a t-value of 6.22 and a p-value of 0.000. In the scores of COVID-19 prevention practice, it was found that the intervention group data showed a significant Increased from 2.57 (SD = 0.98) to 3.13 (SD = 2.34) with a p-value of 0.000.

Conclusions: This study found the significant improvement of knowledge and practice toward COVID-19 prevention using an internet-based education.

KEYWORDS: internet-based education; knowledge; practice; COVID-19 prevention

INTRODUCTION

Currently, Indonesia and the world community are dealing with the devastation caused by the COVID-19 outbreak, which has resulted in many deaths. COVID-19 is a virus that affects the human respiratory system and is transmitted through droplets in the air (1). Indonesia

is the 9th country with the greatest number of COVID-19 patients in the world. As of October 27, 2020, there were 392,934 COVID-19 patients in Indonesia, with a mortality of 13,411 (2). West Bandung Regency has the highest number of COVID-19 cases in West Java, particularly in densely populated and industrial areas (3).

A study conducted in the United States discovered significant gaps in awareness about COVID-19 symptoms and transmission among respondents who were disproportionately affected by coronavirus disease 2019 (3). While messaging initiatives and public service announcements have been implemented, little thought has been paid to how rural populations can package communications. The majority of communications, in particular, is offered by specialists, and communications may not be tailored to properly address the problems of these populations (4). Since the beginning of the epidemic, healthcare workers have used social media to communicate preventative messages (5), but there is little evidence that this effort has been beneficial. Furthermore, due to the widespread use of social media, information surrounding COVID-19 quickly becomes viral, and much of it is erroneous, such as COVID-19 being a conspiracy or COVID-19 being able to fix itself. This information has an impact on the public's dismissive attitude regarding transmission, as seen by the failure to follow health measures such as not wearing masks, continuing to attend or hold large-group events, and failing to maintain a safe distance. This study aimed to determine the effect of internet-based education to improve knowledge and practice toward COVID-19 prevention among community volunteer in Indonesia.

METHODS

This study is a quantitative study using the queasy-experimental two group pre-posttest design, where in this study the subject group was observed first before being given an intervention, then observed again after being given an intervention. This method is used to analyze the effect of internet-based education on knowledge and practice toward COVID-19 prevention among community volunteer in Indonesia. In this study there was a comparison group (control) and an intervention group.

The intervention in the form of internet-based education was offered to respondents in 5 sessions (45 minutes each meeting) in 3 weeks in the form of discussions utilizing power points and applications regarding COVID-19 prevention. The study was conducted in April-May 2021.

The sample was drawn from Batujajar regency, West Java, Indonesia using the convenience sampling method. In the research sample, the respondents are those who meet the inclusion criteria during the study: age over 18 years old, able to communicate well, not have visual and hearing impairment, can read and write, willing to be involved in research, and have access to android gadgets.

The estimated sample size was calculated using g-power software version 3.1.9.2 and F-test, ANCOVA: Fixed effects, main effects, and interactions assuming two tails, = 0.1, Effect size = 0.25 (Cohen, 1988), power level = 0.8. The minimum estimated sample size is 101 plus a 10-15% attrition rate, for a total sample size of 110. Due to this study, there had two groups, thus for each group has an estimated sample of 55 respondents.

Knowledge and practice. The participants were asked to determine measures of preventing COVID-19 spread, including maintaining a separation of six feet from everyone else while going outdoors, washing their hands before going home and wearing masks/face covers on the outside. Failure to recognize each of these three techniques results in an additional knowledge gap of one. Those who replied "no" earned an extra unit for the calculation of the knowledge gap, which allowed the COVID-19 to be spread asymptomatically. Lastly, respondents were asked to select precisely three COVID-19-related signs from a list of nine. Each non-cough, fever, shortness of breath, or new loss of sensation or smell sign chosen raises the quantity of knowledge gaps by one. The knowledge gap result is represented as an integer that can range from 0 to 7 (full knowledge) depending on the situation. Additionally, we create an indicator for "any knowledge gap," which is 1 if the knowledge gap is larger than 1, and 0 if it is less than 1.

Researchers used a standard lottery approach to choose respondents and then requested cadres for assistance in facilitating meetings between researchers and prospective respondents who satisfied the inclusion criteria that had been established. The researcher began by joining the WhatsApp group and identifying himself. Then, approached the selected respondents to explain the objective, advantages, and duration of the research, as well as the respondent's rights and the time contract for conducting the research process with the respondent. Following that, if the respondent agrees to participate in the research, the respondent signed an informed consent form that the researcher divides into two groups, the intervention group and the control group. A questionnaire was used to conduct a pre-test with two groups of respondents. After both groups completed the pre-test, the intervention group received a 45-minute internet-based education over the course of four weeks in five meetings. The intervention was briefed on the purpose of the info corner. This application includes a variety of health-related information and educational films. The post-test assessment was conducted by calculating the outcomes following the administration of a mobile application. Prior to processing the questionnaire data, it was verified. After the trial is complete, the control group received the identical intervention, namely a mobile application, to ensure that they receive the same advantages and benefits.

The univariate analysis used a frequency distribution to describe the demographics of respondents and an overview of knowledge and practice of preventing COVID-19 before and after the internet-based education intervention was carried out in each group. Bivariate analysis was carried out with the aim of knowing the differences between the provision of mobile applications on the knowledge and practice of preventing COVID-19 from the control

group and the intervention group before and after being given treatment. The test using IBM SPSS statistics version 23 software.

RESULTS

The number of samples in this study were 150 respondents consisting of 84 respondents (56.4) male and 66 respondents (44.0) female. Of these 150 respondents, 75 respondents were in the intervention group and 75 respondents were in the control group.

The average age of the respondents was 32.98 (SD=7.99). Most of the respondents (66%) are female and 98% use social media applications and most of the respondents (96.7%) use social media applications every day. The results of the bivariate analysis with independent t-test and chi-square showed that there was no significant difference between the

Variable	Pre-test (Mean±SD)	Post-test (Mean±SD)	*t*	Mean difference	*p-value*
Knowledge					
Intervention group	2.02 ± 1.25	3.45 ± 1.31	6.20	1.34	0.000
Control group	2.25 ± 2.746	2.53 ± 1.74	1.13	0.493	0.260
Practice					
Intervention group	2.57 ± 0.98	3.13 ± 1.34	4.02	0.44	0.000
Control group	2.61 ± 0.88	3.53 ± 1.89	0.56	0.08	0.571

intervention group and the control group in terms of age, gender, use of social media applications, and time of use of social media applications.

Table 1. Differences in scores before and after intervention in the intervention and control groups (n=150).

Table 1 shows that the value of COVID prevention knowledge before and after the internet-based education intervention increased significantly from 2.02 (SD=1.25) 2 to 3.45 (SD=1.31) with a t-value of 6.22 and a p-value of 0.000. While in the control group there was no significant decrease with p-value 0.260. Furthermore, in the scores of COVID-19 prevention practice, it was found that the intervention group data showed a significant Increased from 2.57 (SD = 0.98) to 3.13 (SD = 2.34) with a p-value of 0.000.

DISCUSSION

Increased knowledge is only 1 step in affecting behavior and exposure to the disease, so the final clinical significance of these findings is uncertain. Information on the social acceptability of masks also did not affect information-seeking behavior even among those who modified their beliefs. Tailoring the internet-based education through content of messages had statistically significant effect on prevention behavior. Preventive behaviors may be easier to measure when COVID-19 restrictions have eased. The effect of tailoring messages may also vary depending on the political climate.

Our study has limitations. First, it was conducted online because field activities were paused for many institutions at the time. Participants thus may have been more likely to have Internet access and be interested in an online study than the average low-income Black or Latinx individual, although recruitment was focused on persons with less than a college education and the final sample appears to be economically disadvantaged.

Furthermore, due to the widespread use of social media, information concerning COVID-19 quickly goes viral, and most of it is a hoax, such as COVID-19 being a conspiracy or COVID-19 being able to repair itself. This knowledge has an impact on the public's contemptuous attitude regarding transmission, as seen by failure to comply with health standards such as not wearing masks, continuing to attend or hold activities attended by a large number of people, and failing to maintain distance.

The world is currently experiencing the fourth industrial revolution, with digitization serving as one of the problems and answers. In all areas in Indonesia, the usage of digital technology, which is currently evolving into the Internet of Things (IoT), is still quite limited. According to data from the Indonesian IoT organization, IoT adoption remains around 10%. Even during the COVID-19 pandemic, remote monitoring of activities or health status will be quite beneficial. Furthermore, keeping a safe distance from individuals is an effective approach to disrupt the COVID-19 transmission chain. In Indonesia, particularly in the rural

area, the usage of IoT in the health sector is still quite restricted, both in tertiary and primary care. Furthermore, many people in practically all places, are still technologically illiterate. Exposure to and usage of technology in the fast-developing health sector has not been well understood, therefore its use is still quite limited.

CONCLUSION

This study found the significant improvement of knowledge and practice toward COVID-19 prevention using an internet-based education. Distance learning is a new and quickly expanding strategy for all people as a result of technological advancements and social media. It could be the best way to keep learning processes going in extreme and emergency scenarios like the COVID-19 pandemic. In order to successfully implement remote learning in medical education, it is necessary to first understand the technological, financial, and institutional constraints that exist. Understanding these barriers is vital for the successful implementation of distance learning in medical education.

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