The Promotion of Knowledge and Attitude towards the Prevention of COVID-19 for Undergraduate Students

Kuantean Wongchantra

Srimahasarakham Nursing College, Faculty of Nursing

Praboromarajhanok Institute, Thailand

Tel: 66-985-500-408   E-mail: kuantean@smnc.ac.th

Prayoon Wongchantra (Corresponding author)

Faculty of Environment and Resource Studies, Mahasarakham University

Kham Riang, Kantharawichai District, Maha Sarakham, Thailand

Tel: 66-816-000-180   E-mail: prayoon_nam@yahoo.co.th

Suparat Ongon

Center of Environmental Education Research and Training

Faculty of Environment and Resource Studies, Mahasarakham University

Kham Riang, Kantharawichai District, Maha Sarakham, Thailand

Likhit Junkaew

Center of Environmental Education Research and Training

Faculty of Environment and Resource Studies, Mahasarakham University

Kham Riang, Kantharawichai District, Maha Sarakham, Thailand

Kannika Sookngam

Center of Environmental Education Research and Training

Faculty of Environment and Resource Studies, Mahasarakham University

Kham Riang, Kantharawichai District, Maha Sarakham, Thailand

Uraiwan Praimee

Center of Environmental Education Research and Training

Faculty of Environment and Resource Studies, Mahasarakham University

Kham Riang, Kantharawichai District, Maha Sarakham, Thailand

Surasak Kaeongam

Center of Environmental Education Research and Training

Faculty of Environment and Resource Studies, Mahasarakham University

Kham Riang, Kantharawichai District, Maha Sarakham, Thailand

Thongchai Pronyusri

Center of Environmental Education Research and Training

Faculty of Environment and Resource Studies, Mahasarakham University

Kham Riang, Kantharawichai District, Maha Sarakham, Thailand

Phanadda Ritsumdaeng

Center of Environmental Education Research and Training

Faculty of Environment and Resource Studies, Mahasarakham University

Kham Riang, Kantharawichai District, Maha Sarakham, Thailand

Abstract

The purpose of this research were to study and compare knowledge and attitudes towards prevention of COVID-19 before and after promotion and study and compare knowledge and attitudes towards the prevention of COVID-19 of students with different genders. The sample used in the study were 50 the third year undergraduate students in Environmental Education program, Faculty of Environment and Resource Studies, Mahasarakham University, which was derived by purposive sampling. The research tools were the coronavirus disease 2019 prevention and control manual for citizens by the Ministry of Health, knowledge test about

prevention of COVID-19, attitude test towards prevention of COVID-19. The statistics used for data analysis were frequency, percentage, mean, standard deviation and hypothesis testing using Paired t-test and One-Way ANOVA. The results of the research showed that the posttest, the students had average scores of the knowledge and attitude towards prevention of COVID-19 higher than the pretest statistical significance (p < .05). And there was no significant difference of score of knowledge and attitude towards prevention of COVID-19 of students with different genders (p > .05).

Keywords: Promotion, Knowledge, Attitudes, Prevention of COVID-19

1. Introduction

1.1 Introduce the Problem

COVID-19 is caused by the coronavirus infection, which is a virus in animals. There are many species usually does not cause disease in humans, but when mutated, it is a new species that causes disease in humans. While people still do not know and do not have immunity, therefore causing an epidemic, it is an infectious disease of the respiratory system. Hypothesized that the mutant virus may have originated in bats infected through an intermediate animal and people to get the infection to spread from person to person. Currently, COVID-19 has spread all over the world (Department of Disease Control, Ministry of Public Health, 2020).

COVID-19 outbreak widespread across the world is a threat to mankind. The only possible solution to fighting the disease is to immunize the population. At the moment there are ongoing efforts to develop a vaccine, but it may take at least a year. Beyond vaccines, holistic health care, this is a principle that has been studied for a long time until it is accepted as a practice around the world. Which consists of clean eating full of nutrients emphasize vegetables in a higher proportion than other foods, getting enough exercise and rest including quitting risky behaviors, including smoking and drinking, it will be a shield to protect us from the threat of this type of virus (Pharmaceutical Group and Thai Traditional and Alternative Medicine Work Group, 2019).

The severity of the coronavirus disease is highly contagious on average, one patient can infect an average of 2-4 other people, thus spreading the infection quickly. Corona virus infection most, about 80 percent, have mild symptoms or without symptoms. But some people may have severe symptoms causing complications such as pneumonia, kidney failure or may die in the elderly group 70-79 years and with chronic diseases such as diabetes, high blood pressure, heart disease, etc., the mortality rate is higher than 8%. While the elderly over 80 years old, the mortality rate is higher than 14.6%. On average, of 100 coronavirus cases, 12-15 will develop pneumonia and 3-5 are severely ill (Department of Disease Control, Ministry of Public Health, 2020).

The epidemic situation of the coronavirus or COVID-19 has caused the government to take measures to control the outbreak by starting to use lockdown measures resulting in a halt in the economy. Which measures in addition to affecting the way of life also affect the business sector and the overall economy of Thailand as well. The research results have assessed the

impact of the COVID-19 epidemic. That will cause the world economy to contract by 3.2% and the ASEAN economy will fall by 2.1-5.4% from the normal situation. If a two-month lockdown is implemented, Thailand will be the most affected among ASEAN member states. With tourists expected to drop 60% from last year, the disruption of domestic and international production chains, this year's economic growth may shrink by 5.4%. It was previously expected to shrink 0.8% to 5.0%, the lowest level since the Tom Yum Kung crisis in 1998, as the Thai economy was severely hit by the COVID-19 outbreak more than previously assessed (Meeboonlue, 2010).

Guidelines for solving the problem of economic and social impacts from the epidemic situation of the novel coronavirus disease (COVID-19), both in terms of the approach to solving the economic impact problem, by helping to compensate career building using measures to help with the cost of living. The guidelines for solving the social impact problem both the guidelines for taking care of the people themselves include health care, reduce meetings in public places, everyone in society must understand each other. As for the public health promotion guidelines by the government, such as distributing masks thoroughly, encourage people in the community to turn to exercise, public relations provide practical information to see for yourself, building awareness about the treatment of disease and improve medical treatment. Governments and society should provide assistance to care for fragile households. Especially fragile households are more redundant than general households. Remedies must be made universally, not missing, for example, income support should be in a manner that must be obtained in all households (Universal Access). In terms of measures related to government expenditures, the cost of living reductions that are already implemented can be applied. In addition, the state should have specific supplementary measures, for example having a mobile medical unit or a telemedicine (Telemedicine) for fragile households with travel problems for medical services, the elderly, bedridden patients, people with disabilities, etc. (Department of Disease Control, Ministry of Public Health, 2020).

Therefore, the researcher considers that the COVID-19 virus has also affected teaching and learning. Therefore, the researcher is interested in studying the prevention of COVID-19 on knowledge and attitudes of students in Environmental Education program, Faculty of Environment and Resource Studies, Mahasarakham University as a guideline for effective prevention of COVID.

1.2 Research Objectives

(1) To study and compare knowledge and attitudes towards prevention of COVID-19 before and after promotion.

(2) To study and compare knowledge and attitudes towards prevention of COVID-19 of students with different gender.

2. Method

2.1 Conceptual Framework for Research

Promotion of knowledge and attitude on the prevention of COVID-19 for undergraduate students was divided into 2 phases: phase 1; the development of research tools; knowledge test about prevention of COVID-19 and attitude test on prevention of COVID-19. Then send to specialists to determine the quality of the tool and take it to try out. As phase 2; enhancing knowledge and attitudes towards the prevention of COVID-19 for 50 the third year undergraduate students in Environmental Education program, Faculty of Environment and Resource Studies, Mahasarakham University, be selected from purposive sampling, to provide students with knowledge and attitudes on the prevention of COVID-19.
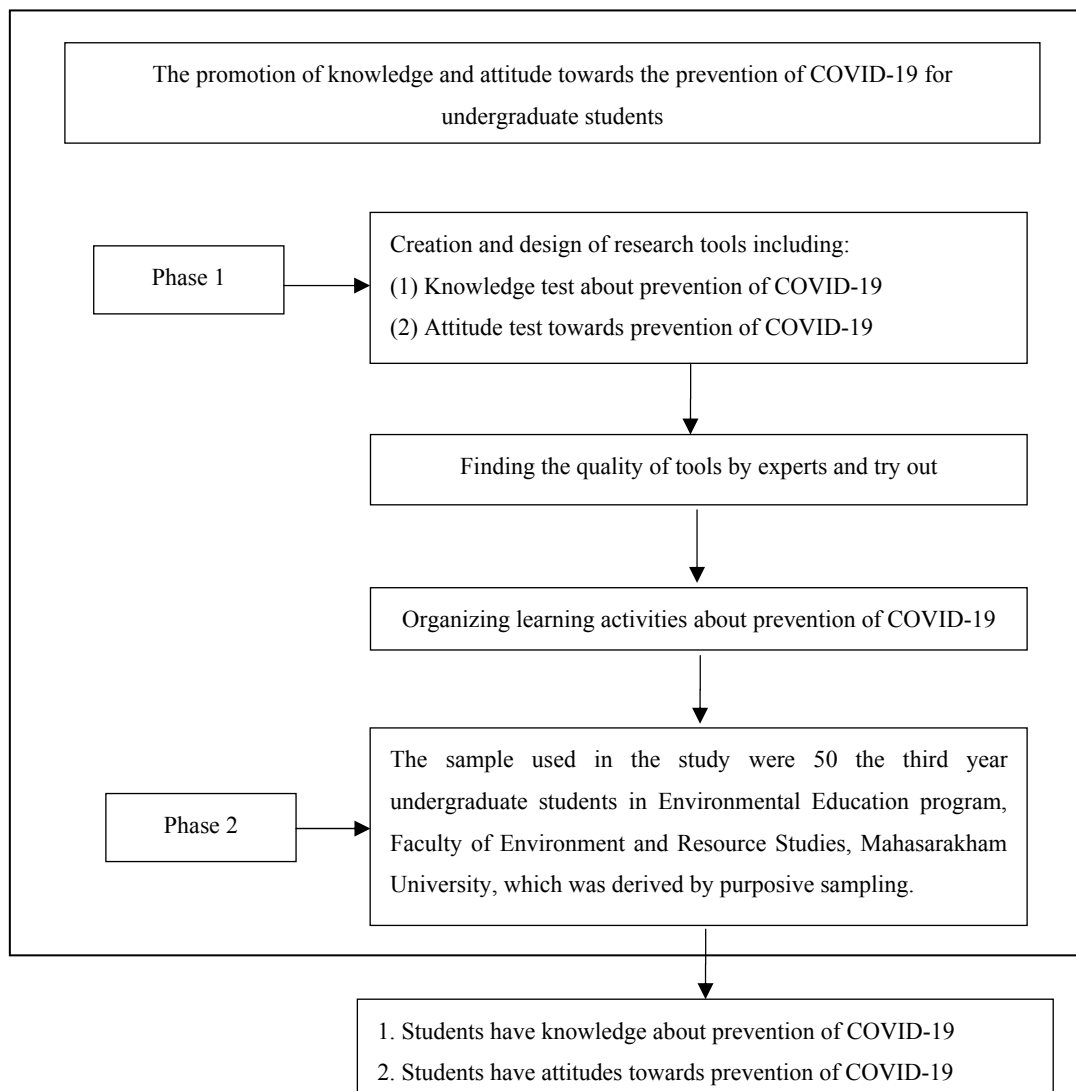

Figure 1. Research conceptual framework

2.2 Population and Sample

The population used in this training were 329 undergraduate students of year 1-4 in Environmental Education program, Faculty of Environment and Resource Studies, Mahasarakham University.

The sample used in the study were 50 the third year undergraduate students in Environmental Education program, Faculty of Environment and Resource Studies, Mahasarakham University, which was derived by purposive sampling.

2.3 Tools Used in Research

(1) Coronavirus disease 2019 prevention and control guide for people by the Ministry of Health.

(2) Knowledge test about prevention of COVID-19.

(3) Attitude test towards prevention of COVID-19.

2.4 The Research Tools and Quality of Tools

(1) Study the information of relevant research papers and guidelines for creating research instruments.

(2) Use the data to create knowledge test about prevention of COVID-19 and towards prevention of COVID-19 with the following characteristics:

(a) Knowledge test about prevention of COVID-19, it is a multiple choice test with 4 choices, namely A, B, C and D, correct answer gets 1 point, wrong answer gets 0 points, total of 30 questions.

(b) Attitude test towards prevention of COVID-19, it is a rating scale, which is characterized as a form to determine the answer, divided into 5 levels; strongly agree, agree, not sure, dis agree and strongly disagree, totaling 30 items.

(3) Take the knowledge test about prevention of COVID-19 and attitude test towards prevention of COVID-19 sent 5 experts to consider the consistency of the test found that:

(a) The knowledge test about prevention of COVID-19 is an IOC value of 0.95. It is considered consistent with the specified criteria, can be used to store data.

(b) The attitude towards prevention of COVID-19 is an IOC value of 0.96. It is considered consistent with the specified criteria, can be used to store data.

(4) Bring the tools used in the research to try out with 30 the second year undergraduate students in Environmental Education program, Faculty of Environment and Resource Studies, Mahasarakham University that are not the sample to find the difficulty power to classify each item and the confidence values for the whole issue as follows:

(a) The knowledge test about prevention of COVID-19 was found that the difficulty value ranged from 0.20-0.56, the power to discriminate between 0.23-0.65 and the

confidence value of the whole version was 0.90, which was according to the specified criteria, can be used to store data.

(b) The attitude test towards prevention of COVID-19 was found that the power rating of each item was between 0.32-0.77 and the confidence value of the whole issue was 0.94, which met the specified criteria, can be used to store data.

(5) Bring the tools used in the research to improve and make a complete version to collect data with the sample.

2.5 Data Collection

(1) Prepare documents used in the promotion, including the coronavirus disease 2019 prevention and control manual for the public by the Ministry of Health, knowledge test about prevention of COVID-19 and attitude test towards prevention of COVID-19.

(2) The knowledge test and attitude test towards prevention of COVID-19 were used to pretest with sample were 50 the third year undergraduate students in Environmental Education program, Faculty of Environment and Resource Studies, Mahasarakham University via online system.

(3) Transmit information about COVID-19 through online. It consists of a total of 3 content units, which are: unit 1 coronavirus disease 2019 or COVID-19, unit 2 guidelines for surveillance and investigation of coronavirus disease 2019 and unit 3 recommendations and guidelines for the prevention and control of coronavirus disease 2019 for a period of 3 days.

(4) Take a knowledge test and attitude test towards prevention of COVID-19 to posttest with the sample via online system.

(5) Summarize and analyze the data.

2.6 Statistics Used in Research

(1) Basic statistics are frequency, percentage, mean and standard deviation.

(2) The statistics used in the quality analysis of the tools were content validity (IOC), confidence values, difficulty value and classification power.

(3) Statistics used to test hypotheses at .05 statistical significance were Paired t-test and One-way ANOVA.

3. Results

(1) The results of the study of average knowledge and attitude towards prevention of COVID-19 of students before and after promotion as shown in Table 1.

(a) Before promotion, knowledge about prevention of COVID-19 of students was at a high level ($\bar{x}$ = 18.64) and after promotion, was at the highest level ($\bar{x}$ = 25.74). When comparing knowledge about prevention of COVID-19, after promotion score of knowledge of students more than before the promotion the statistically significant level .05.

(b) Before promotion, attitude towards the prevention of COVID-19 of students was at strongly agree (x⁻ = 4.32) and after promotion, was at strongly agree (x⁻ = 4.61). When comparing attitudes towards prevention of COVID-19, after promotion score of attitude of students was more than before the promotion the statistically significant level .05.

(2) The results of the study and comparison of knowledge and attitude towards the prevention of COVID-19 of students with different genders, as shown in Table 2.

(a) There was no different of mean score of knowledge about prevention of COVID-19 of students with different gender (p > .05).

(b) There was no different of mean score of attitude towards the prevention of COVID-19 of students with different gender (p > .05).

Table 1. Results of the study on average knowledge and attitude towards prevention of COVID-19 of students before and after promotion (n = 50)

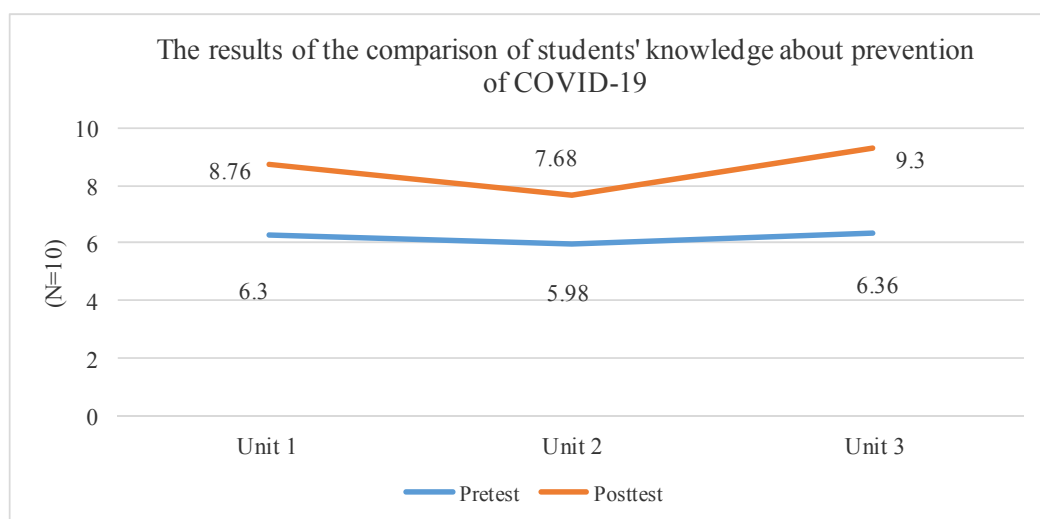| Item	Pretest			Posttest			t	df	p
	x⁻	S.D.	Level	x⁻	S.D.	Level			
Knowledge about prevention of COVID-19 (N = 30)	18.64	1.63	High	25.74	2.90	Highest	-15.345	49	.000*
Attitude towards prevention of COVID-19 (N = 5)	4.32	0.69	Strongly agree	4.61	0.38	Strongly agree	-2.440	49	.000*

Note. * Statistically significance .05.

Figure 2. Comparative chart of knowledge about prevention of COVID-19 of students before and after promotion each unit
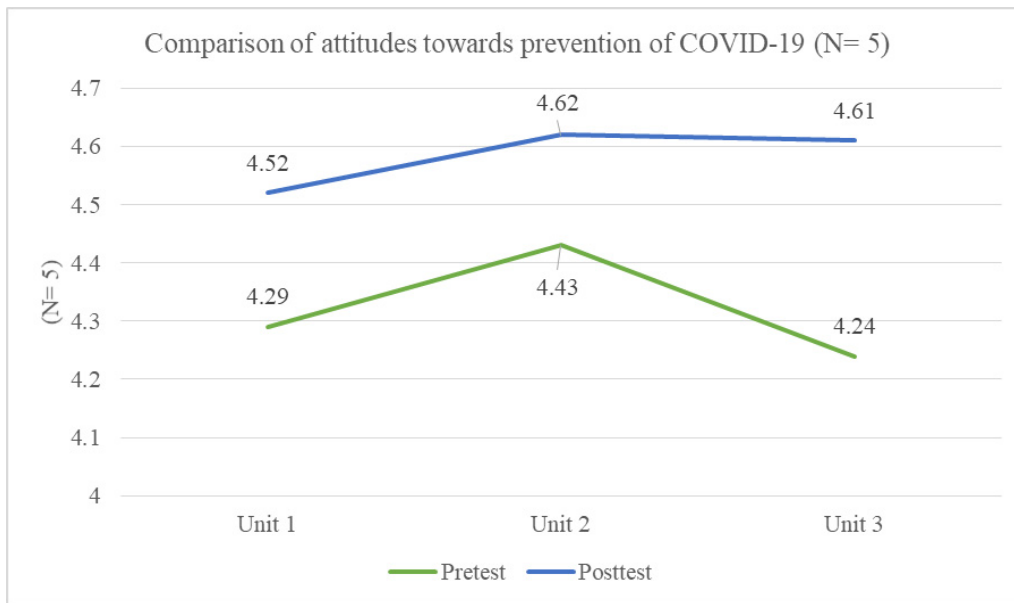
Figure 3. Comparative chart of attitude towards the prevention of COVID-19 of students before and after promotion each unit

Table 2. Comparative results of knowledge and attitude towards the prevention of COVID-19 of students of different genders using One-Way ANOVA

List	Gender	Number	One-Way ANOVA			
			x^-	S.D.	F	Sig.
Knowledge about prevention of COVID-19	Male	16	25.88	3.36	0.50	.824
	Female	34	25.68	2.72		
Attitude towards prevention of COVID-19	Male	16	4.61	0.40	0.03	.958
	Female	34	4.62	0.38		

4. Discussion

(1) The results of the study of average knowledge and attitude towards prevention of COVID-19 of students before and after promotion.

(a) The results of the study and comparison of knowledge about prevention of COVID-19 of undergraduate students, was found that the students had a high average score of knowledge before promotion and after the promotion, the students had knowledge average scores at the highest level. When comparing the average scores before and after the promotion, was found that the students had average scores on knowledge about prevention of COVID-19 after promotion is higher than before promotion. It shows that the process of transferring knowledge is easily accessible to

students easy to read as a result, students have more knowledge about the prevention of COVID-19. Which is in line with the concept of Suwan (2018) has been said that knowledge is a behavior that the learner can only classify, possibly through practice or by seeing, hearing, remembering. This level of knowledge includes knowledge of definitions, facts, theories, rules of structure. And which is in line with the concept of Wichianpanya (2004) has explained that knowledge is the unique skill or knowledge of a person who has a belief or creativity in performing tasks. This type of knowledge arises from experience and is brought about by sharing or explicit knowledge is knowledge that is recorded in writing and shared in various ways. This is consistent with the research of Thongthai and Chuacharoen (2018) has studied the knowledge, attitudes and behaviors during the COVID-19 crisis that affect the performance of biomedical engineers, it was found that the biomedical engineers have knowledge of the COVID-19 pandemic, there is a high level of knowledge the average was 13.61. And Morasakul and Punthasee (2021) has studied the knowledge and prevention behaviors regarding COVID-19 among the first-year nursing students of Saint Theresa International College and Saint Louis College, it was found that the average level of knowledge about COVID-19 of first year nursing students were at a moderate level. And Geounuppakul, Panawatanakul, and Nuntananate (2021) has studied the relationship among knowledge, health beliefs and COVID-19 prevention and control behavior of staff and nursing students, Faculty of Nursing Rajamangala University of Technology Thanyaburi, it was found that the teachers, staff and students have knowledge about COVID-19 at a very good level. And Hamad and Mohamed (2020) has studied the knowledge about COVID-19 and beliefs about and use of herbal products during the COVID-19 pandemic: a cross-sectional study in Saudi Arabia, it was found that the participants' knowledge of appropriate COVID-19 prevention measures in terms of hand washing procedures self quarantine and social distancing is moderate. And Labban, Thallaj, and Labban (2020) has studied the assessing the level of awareness and knowledge of COVID-19 Pandemicamong Syrians, it was found that the most of the samples showed moderate knowledge of the epidemiology of COVID-19. Therefore, students have average scores on knowledge about prevention of COVID-19 after promotion is higher than before promotion.

(b) The results of the comparison of attitude towards the prevention of COVID-19 revealed that the students had attitudes towards the prevention of COVID-19 before and after the promotion was at the strongly agree level. When comparing the average scores of the students' attitude towards prevention of COVID-19, it was found that the students had the average scores of attitudes towards preventing COVID-19 after promotion is higher than before promotion. It showed that students have attitude towards the prevention of COVID-19 because students have prevention and focus on learning and studying the prevention of COVID-19, emphasis on learning by educating about the prevention of COVID-19 to give students attitude that they have gained from knowledge of COVID-19 prevention applied in daily life. Which is in line with the concept of Sorasuchat (2013) said that attitude are both positive and negative feelings. It is the mental state of being prepared to learn and be adapted to the organization by experience using a characteristic influence on a person's response to a person individual things and

situations. Attitude is abstract in nature and it is what drives them demonstrated in practice but it's not the motivation and the driving force. And which is in line with the concept of Thankaew (1999) said that attitude reflect the beliefs, opinions, knowledge and information a person has which beliefs will show the thoughts of people or things and conclusions that a person has on that person or thing. And which is in line with the concept of Suwan (2018) said that attitude refers to the feeling of something by accumulating from experience, environment and learning. Attitude is filtered by basic personality traits, which can change when affected by various environmental factors. Attitude is important in every moment of human life, changes in attitudes affect all aspects of society such as governance, religion, education, communication, etc. This is consistent with the research of Khumsaen (2021) has studied the knowledge, attitudes and preventive behaviors of COVID-19 among people living in Amphoe U-thong, Suphanburi Province, it was found that the people have attitudes to protect themselves from contracting the COVID-19 virus at a high level. And Tobunluepop, Boonkuna, Padwang, and Kiartsuwan (2021) has studied the perception, attitudes and knowledge of social distancing policy and the effect on social distancing behaviors, psychological health and quality of life in Lampang Population During COVID-19 Pandemic, it was found that the attitude towards measures and implementation of measures were moderate (Mean 17.86, SD 2.51 and Mean 34.83, SD 4.92, respectively). And attitude towards social distancing measures negatively predicted mental health in anxiety and stress, 8.6 and 6.5%, respectively. And Giao and Thi Ngoc (2020) has studied the knowledge and attitude toward COVID-19 amonghealthcare workers at District 2 Hospital, Ho Chi Minh City, it was found that the healthcare workers had mean attitude scores of 8.17 and 1.86, respectively, indicating that the participants had a positive attitude. And Mohammed et al. (2020) has studied the knowledge, attitude and practice toward COVID-19 among the public in the Kingdom of Saudi Arabia: a cross-sectional study, it was found that the most of the study participants had optimistic attitudes about COVID-19. Therefore after promotion, students have average scores on attitude towards the prevention of COVID-19 is higher than before promotion.

(2) The results of the study and comparison of knowledge and attitude towards the prevention of COVID-19 of students with different gender.

(a) There was no different of mean score of knowledge about prevention of COVID-19 of students with different gender. This is a result of the students having the same level of knowledge and students received the same knowledge transfer. Therefore, male and female students have no difference in knowledge. Which is in line with the concept of Royal Academy (1995) gave the meaning of the word knowledge, meaning knowledge relating to facts, rules, and structures arising from education or grab which is obtained by observation, experience or reports, recognizing these facts must be clear and time consuming. And which is in line with the concept of Sawatdee (1999) said that knowledge is an elementary behavior that learners only need. It may be recognizable or by seeing, hearing and remembering. However, COVID-19 it is a contagious disease caused by droplets, coughs, sneezes or secretions from patients is caused by the corona

virus. Most infected people have no symptoms or less symptoms a minority is severe. The symptoms of the disease are usually the upper respiratory tract. If it is a lot, there are often symptoms in the lungs, more adults have the disease than children. The most severe cases are the elderly and have chronic disease the mortality rate was found to be 2-3% of all patients. There is no direct cure for the disease, but antiviral drugs are used. The method to prevent disease is based on the principle of prevention at the source of the disease through the path keeping distance and the recipient must maintain hygiene and wear respiratory protection and there is no vaccine against this disease (Siriboriruk & Prueksaritanond, 2020). This is consistent with the research of Suebsomran, Sukhumal, Boomkhao, and Limpiteeprakan (2010) has studied the association between knowledge, attitudes and preventive behaviors of pandemic influenza a (H1N1) among students at Ubon Ratchathani University, it was found that the male and female students had no difference in knowledge about the prevention of the novel influenza virus. And Ongarj and Ungcharoen (2021) have studied the self-protection behavior of COVID-19: a case study of students at Kasetsart University, Chalermphrakiat Campus, Sakon Nakhon Province, it was found that the male and female students have knowledge about COVID-19 infection, no different. And Kaewsuksai, Kongkun, Tongkoop, Samaair, and Boonnarakorn (2021) has studied the relationships between knowledge, perception and the "new normal behaviors" for preventing coronavirus disease (COVID-19) infection among people in Narathiwat Province, it was found that the people of different genders had no difference in knowledge about the new lifestyle. And Qiao and Li-Sha (2021) has studied the gender differences in psychological and behavioral responses of infected and uninfected health-care workers during the early COVID-19 outbreak, it was found that the healthcare workers of different genders had no difference in their knowledge of infected and uninfected health during the COVID-19 outbreak.

(b) There was no different of mean score of attitudes towards the prevention of COVID-19 of students with different gender. This was a result of male and female students who had similar thinking and analytical levels causing a feeling of awareness about the prevention of COVID-19 similar. As a result, male and female students have ideas and it's an analytical thinking and opinion that is not different. Which is in line with the concept of Huansuriya (2019) said that attitude is defined as the learned inclination to engage in behavior that corresponds to a preference or dissatisfaction towards something or it could mean expressing inner feelings that reflect the person's inclinations satisfied or dissatisfied with something. And which is in line with the concept of Paopichit (2017) said that attitude is defined as the combination of thoughts, beliefs, opinions, knowledge and feelings of a person towards a particular person or situation. Which came out in the valuation that may be in the way of acceptance or rejection and these feelings are more likely to trigger a particular behavior. This is consistent with the research of Sansupa, Kongkranphan, Sucaromana, and Nantasen (2020) has studied the adjustment of undergraduate student in pandemic COVID-19, it was found that the male and female students are adapting to the COVID-19 situation, the overall picture is no different. And Barisri, Sukperm, Phavaputanont Na Masarakham, Nilphai, and Lammana (2020) have studied the COVID-19 prevention behaviors of

students of Roi-Et Rajabhat University, it was found that the male and female students have attitudes to protect themselves from COVID-19 no different. And Roongsathaporn and Satawedin (2021) has studied the consumer behavior and online shopping in the amidst of COVID-19 in Bangkok, Metropolitan and Phitsanulok, it was found that the different genders affect online shopping decisions during the COVID-19 crisis no different. And Halitoglu (2021) has studied the attitudes of student teachers towards distance education within the context of COVID-19 pandemic, it was found that the subjects had no different attitude towards distance education in the context of the COVID-19 outbreak.

Acknowledgements

References

Barisri, J., Sukperm, K., Phavaputanont Na Masarakham, N., Nilphai, P., & Lammana, P. (2020). COVID-2019 Prevention Behaviors (COVID -2019) Students of Roi-Et Rajabhat University. *Journal of Legal Entity Management and Local Innovation, 6*(6), 37-45.

Department of Disease Control, Ministry of Public Health. (2020). *Coronavirus Disease 2019 Prevention and Control Guide for People.* Nonthaburi: Agricultural Cooperative Community Printing House of Thailand Co., Ltd.

Geounuppakul, M., Panawatanakul, S., & Nuntananate, P. (2021). The Relationship among Knowledge, Health Beliefs and COVID-19 Prevention and Control Behavior of Staff and Nursing Students,Faculty of Nursing Rajamangala University of Technology Thanyaburi. *Nursing Journal of the Ministry of Public Health, 31*(2), 81-92.

Giao, H., Thi Ngoc, H. N. (2020). Knowledge and attitude toward COVID-19 amonghealthcare workers at District 2 Hospital, Ho Chi Minh City. *Asian Pacific Journal of Tropical Medicine, 13*(6), 260-265. https://doi.org/10.4103/1995-7645.280396

Halitoglu, V. (2021). Attitudes of Student Teachers towards Distance Education within the Context of COVID-19 Pandemic. *International Journal of Curriculum and Instruction, 13*(1), 816-838.

Hamad, S. A., & Mohamed, A. A. O. (2020). Knowledge about COVID-19 and beliefs about and use of herbal products during the COVID-19 pandemic: A cross-sectional study in Saudi Arabia. *Saudi Pharmaceutical Journal, 28*(11), 1326-1332. https://doi.org/10.1016/j.jsps.2020.08.023

Huansuriya, T. (2019). Attitudes and inclinations learned to have behaviors consistent with pleasing or dissatisfied characteristics. *Graduate Studies Journal, 12*(59), 157-158.

Kaewsuksai, R., Kongkun, P., Tongkoop, B., Samaair, L., & Boonnarakorn, S. (2021). Relationships Between Knowledge, Perception, and the "New Normal Behaviors" for Preventing Coronavirus Disease (COVID-19) Infection among People in Narathiwat Province. *The Southern College Network Journal of Nursing and Public Health, 8*(2), 67-79.

Khumsaen, N. (2021). Knowledge, Attitudes, and Preventive Behaviors of COVID-19 among People Living in Amphoe U-thong, Suphanburi Province. *Journal of Prachomklao College of Nursing, Phetchaburi Province, 4*(1), 33-48.

Labban, L., Thallaj, N., & Labban, A. (2020). Assessing the Level of Awareness and Knowledge of COVID-19 Pandemicamong Syrians. *Archives of Medicine, 12*(2:8), 1-5. https://doi.org/10.36648/1989-5216.12.2.309

Meeboonlue, J. (2010). *National Security: Building a Sustainable Thai Nation*. Bangkok. Center for Strategic Studies, National Defense Academy.

Mohammed, K. A.-H., Angawi, K., Alshareef, N., Ameerah, M. N. Q., Hoda, Z. H., Abudawood, Y., … Alsharqi, O. (2020). Knowledge, Attitude and Practice toward COVID-19 Among the Public in the Kingdom of Saudi Arabia: A Cross-Sectional Study. *Public Health, 8*, 1-10. https://doi.org/10.3389/fpubh.2020.00217

Morasakul, B., & Punthasee, P. (2021). Knowledge and Prevention Behaviors Regarding COVID-19 among the First-Year Nursing Students of Saint Theresa International College and Saint Louis Colleg. *Regional Health Promotion Center 9 Journal, 15*(37), 179-195.

Ongarj, P., & Ungcharoen, R. (2021). Self-protection behavior of COVID-19: A Case Study of Students at Kasetsart University, Chalermphrakiat Campus, Sakon Nakhon Province. *Public Health Policy & Law Journal, 7*(1), 87-102.

Paopichit, K. (2017). Attitude is a blend of thoughts, beliefs, opinions, knowledge and feelings of a person. *Journal of Humanities and Social Sciences, Uttaradit Rajabhat University, 4*(1), 76-77.

Pharmaceutical Group and Thai Traditional and Alternative Medicine Work Group. (2019). *The situation with the outbreak of COVID-19*. Retrieved from http://dmsic.moph.go.th/index/detail/8160?fbclidIwAR29

Qiao, H., & Li-Sha, L. (2021). Gender Differences in Psychological and Behavioral Responses of Infected and Uninfected Health-Care Workers during the Early COVID-19 Outbreak. *Public Health, 11*, 1-8. https://doi.org/10.3389/fpubh.2021.638975

Roongsathaporn, T., & Satawedin, P. (2021). Consumer behavior and online shopping in the amidst of COVID-19 in Bangkok, Metropolitan and Phitsanulok. *Journal of Communication Arts, 39*(2), 119-133.

Royal Academy. (1995). *Dictionary of the Royal Institute of Thailand, 2525 B.E.* Bangkok: Aksorn Charoenthat.

Sansupa, K., Kongkranphan, U., Sucaromana, U., & Nantasen, P. (2020). The Adjustment of Undergraduate Student in Pandemic COVID-19. *Journal of MCU Humanities, 6*(2), 83-97.

Sawatdee, A. (1999). *Knowledge, Understanding and Awareness of Environmental Conservation of High School Students: A Case Study in Bangkapi District, Bangkok* (Master's Thesis, Department of Social Development, Faculty of Social Development, Graduate Institute of Development Administration).

Siriboriruk, J., & Prueksaritanond, S. (2020). COVID-19. *Burapha Journal of Medicine, 7*(1), 89-95.

Sorasuchat, A. (2013). *Using Musical Activities to Develop Youth's Emotional, Social and Intellectual Skills with Keereeboon Genius Music Program* (Master's Thesis, School of Communication Arts, Sukhothai Thammathirat Open University, Thailand).

Suebsomran, P., Sukhumal, P., Boomkhao, L., & Limpiteeprakan, P. (2010). *Association Between Knowledge, Attitudes and Preventive Behaviors of Pandemic Influenza A (H1N1) Among Students at Ubon Ratchathani University*. Ubon Ratchathani University, Thailand.

Suwan, P. (2007). *Attitude: Measuring Changes in Health Behaviors*. Bangkok: Thai Wattana Panich Printing.

Suwan, P. (2018). *Attitude towards something by accumulating from experience environment and learning.* Bangkok: Chulalongkorn University.

Thankaew, B. (1999). *Ethics.* Bangkok: Kurusapa Printing Ladphrao.

Thongthai, N., & Chuacharoen, O. (2018). *Knowledge, Attitudes and Behaviors during the COVID-19 Crisis that Affect the Performance of Biomedical Engineers* (Master's Thesis, Ramkhamhaeng University, Thailand).

Tobunluepop, N., Boonkuna, T., Padwang, B., & Kiartsuwan, J. (2021). Perception, Attitudes, and Knowledge of Social Distancing Policy and the Effect on Social Distancing Behaviors, Psychological Health and Quality of Life in Lampang Population During COVID-19 Pandemic. *Journal of Health Sciences Scholarship, 8*(1), 168-184.

Wichianpanya, P. (2004). *Management of Fundamentals and Applications*. Bangkok: Expernet.

Copyright Disclaimer