ปัจจัยที่มีอิทธิพลต่อความรอบรู้ด้านสุขภาพเพื่อป้องกันโคโรน่าไวรัส 2019 ของครูประถมศึกษาในเมืองอาวเจียง ประเทศสาธารณรัฐประชาชนจีน

FACTORS INFLUENCING HEALTH LITERACY TO PREVENT COVID-19 INFECTION OF PRIMARY SCHOOL TEACHERS IN AOJIANG TOWN, CHINA

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บทคัดย่อ

การแพร่ระบาดของโคโรน่าไวรัส 2019 ทั่วโลกได้ก่อให้เกิดภัยคุกคามด้านสุขภาพ และสร้างความเสียหายต่อระบบการศึกษา ครูควรเป็นแบบอย่างในการป้องกันการระบาดของโคโรน่าไวรัส 2019 ให้กับนักเรียนและชุมชนโดยเฉพาะครูโรงเรียนประถมศึกษา ดังนั้นความรอบรู้ด้านสุขภาพเพื่อป้องกันการติดต่อของโคโรน่าไวรัส 2019 ของครูโรงเรียนประถมศึกษาจึงมีความสำคัญ งานวิจัยนี้มีวัตถุประสงค์เพื่อตรวจสอบและระบุปัจจัยที่เกี่ยวข้องกับความรอบรู้ด้านสุขภาพเพื่อป้องกันการติดต่อของโคโรน่าไวรัส 2019 ของครูโรงเรียนประถมศึกษาในเมืองอาวเจียง ประเทศสาธารณรัฐประชาชนจีน จากการคำนวณขนาดตัวอย่างได้ครู 300 คนจากทั้งหมด 547 คนใน 8 โรงเรียน ดำเนินการสำรวจแบบภาคตัดขวางโดยสุ่มตัวอย่างแบบแบ่งชั้นตามสัดส่วนด้วยแบบสอบถามที่ผ่านการตรวจคุณภาพโดยทดสอบในครูมัธยมศึกษา 30 คน ได้ค่าความตรงเชิงพินิจจากผู้เชี่ยวชาญ 3 คน ตั้งแต่ 0.5 และค่าความเที่ยง (KR-21) เท่ากับ 0.75 การวิเคราะห์ข้อมูลใช้สถิติเชิงพรรณนา และเชิงอนุมานโดยการทดสอบค่า t กับสมการถดถอยพหุคูณ โดยใช้โปรแกรม spss ผลการศึกษาพบว่า ความรอบรู้ด้านสุขภาพเพื่อป้องกันการติดต่อโคโรน่าไวรัส 2019 ของครูอยู่ในระดับปานกลาง ปัจจัยที่มีอิทธิพลต่อการป้องกันการติดต่อ

โคโรน่าไวรัส 2019 ของครู ได้แก่ การรับรู้ ระดับการศึกษาและประสบการณ์การสอน ข้อเสนอแนะจากการวิจัยนี้ ได้แก่ โรงเรียนควรมีการประชาสัมพันธ์ หรือจัดกิจกรรมเพื่อสร้างการรับรู้ โดยเฉพาะครูที่จบการศึกษาระดับต่ำกว่าปริญญาตรีและครูที่มีประสบการณ์การสอนน้อยกว่า 5 ปี

คำสำคัญ

ความรอบรู้ด้านสุขภาพ ไวรัสโคโรน่า 2019 ครูประถมศึกษา

ABSTRACT

The COVID-19 pandemic has been a global public health emergency and caused unprecedented damage to the educational system worldwide including in China. Teachers should be role models of preventive COVID-19 practices for students and communities, especially primary school teachers. Hence, the health literacy to prevent COVID-19 infection of primary school teachers has been important. The aims of the current research were to examine and identify relevant health literacy to prevent COVID-19 infection and related factors of primary school teachers in Aojing town, China. According to the appropriate calculation, the research's sample size was 300 primary school teachers from a total amount of 547 teachers in 8 primary schools. These samples were selected by proportional stratified random sampling. Cross-sectional survey study was employed for the research. The questionnaire was tested by 3 experts. Its validity of IOC was more than 0.5 In addition, its reliability was tried out by 30 secondary school teachers with KR-21 of 0.84. Data were analyzed by descriptive statistics, t-test and multiple regression by SPSS. The findings were found that the moderate health literacy prevents COVID-19 infection of teachers. The factors influencing preventive COVID-19 practices were perception, highest education level and work experiences of teachers. It is suggested that schools should promote health literacy to prevent COVID-19 infection for promoting perceptions, especially for under graduate teachers and those who have worked less than 5 years.

KEYWORDS

Health Literacy; COVID-19; Primary School Teachers.

Background and rationale

The coronavirus is a family of viruses which may lead to various symptoms, such as fever, dyspnea, and pneumonia (Li et al., 2020). The World Health Organization (WHO) called the term 2019 novel coronavirus (COVID-19) referring to a coronavirus that infects the lower respiratory tract of patients with pneumonia in Wuhan, China on 29 December 2019 (CDC, 2019). The current reference name for the virus is severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). It was reported that a cluster of patients with pneumonia of unknown cause was linked to a local Huanan South China Seafood Market in Wuhan, Hubei Province, China in December 2019 (Zhu et al., 2020). The WHO confirmed that the outbreak of the coronavirus epidemic was associated

with the Huanan South China Seafood Marketplace, but no specific animal association was identified (WHO, 2020). Within 1 month, this virus spreaded quickly throughout China during the Chinese New Year, a period when there was a high level of human mobility among Chinese people. Although it was still too early to predict susceptible populations, early patterns have shown a trend similar to Severe Acute Respiratory Syndrome (SARS) and Middle East respiratory syndrome (MERS) coronaviruses. Susceptibility seems to be associated with age, biological sex, and other health conditions. COVID-19 has been declared as a Public Health Emergency of International Concern by WHO. Human-to-human transmission of the COVID-19 has posed a major global health threat (Wang, et al., 2020). Since the WHO declared the COVID-19 as a pandemic and hence a public health emergence of international concern, the rate of new infections and deaths has been ever-accelerating in many parts of the world. As of August 17, 2020, at least 21,549,706 confirmed cases of COVID-19, including 767,158 deaths, were reported in 216 countries around the world (WHO, 2020). This pandemic has brought a significant change in lifestyle as well as working environment. Such sudden changes to daily life may have adversely impacted peoples' mental health (Dong & Bouey, 2020). Towns were locked down and various measures were made, including shutting down work, closing all kinds of entertainment places, and home segregation. Everyone restricted travel. It is important to know the method to lessen COVID-19 spreading (CDC, 2019).

The main problems were people's lack of concern and understanding about these diseases and lack of compliance with treatment. They were tackled by challenges related to information overloaded. A phenomenon that portrayed the rapid spread and amplification of vast amounts of valid and invalid information on the internet or through other communication technologies (Zarocostas, 2020). During the COVID-19 pandemic, both the production and consumption of information have increased rapidly and significantly (Ashrafi-Rizi & Kazempour, 2020). WHO, amongst others, has stressed that the info-demic (a shortened term of information and pandemic) was a serious threat to public health, public action, social cohesion, and the political landscape as a whole. The info-demic was unprecedented in its size and velocity. The unexpected forms of false information were emerging daily, and no global consensus existed on how best to classify the types of false messages being encountered. On the individual level, the info-demic created confusion among recipients of information, specifically in relation to the identification of reliable information as well as disinformation, misinformation, and mal-information (Baines & Elliott, 2020).

In the current pandemic, negative information bias (causing "catastrophic thinking") and positive information bias (causing "unrealistic optimism") were among many consequences and risks posed by the info-demic (Broucke, 2020). Altogether, this constituted a global scientific challenge. Media literacy and information literacy were critical competencies in the context of info-demic (Luengo-Orz et al., 2020). Since the current info-demic was a health-related info-demic, this was known as health literacy. Although health information about COVID-19 dominates most communication channels, health literacy had thus far remained both an underestimated concept and a neglected field of research in the context of the COVID-19 info-demic. Researchers from various disciplines have urged the need to consider the health literacy of citizens, policymakers, governments, and information producers and providers (Sentell, Vamos, & Okan, 2020). Health

literacy could facilitate in distinguishing between reliable information on COVID-19 and misinformation on the topic, it helped navigate sources of health information and health services, and health literacy empowered people to make informed health decisions and to practice healthy and protective behaviors in the time of the coronavirus and COVID-19 pandemic (Okan, Sorensen, & Messer, 2020). In general, health literacy was defined as the motivation, knowledge, and competence used to access, understand, appraise, and apply health information and make health-related decisions (Sorensen et al., 2012). However, health literacy was a relational concept and the system-level health literacy, e.g., the health literacy of information suppliers and service providers was as important as the health literacy of individuals (Parker & Ratzan, 2010). Past research has shown that low health literacy is associated with various adverse health outcomes (Berkman et al., 2011) and higher health care costs. In addition, several studies have demonstrated the existence of a social gradient in low health literacy with financial deprivation, education, and social status being the strongest predictors. Population-based studies on health literacy have shown great proportions of European (Palumbo, 2017). North American, and Asian populations had difficulties dealing with health-related information. A recent study on fear of COVID-19 in medical students has shown that higher levels of health literacy may lower the level of fear. In another study, higher health literacy levels have shown protective effects against COVID-19 related depression (Nguyen et al., 2020). Understanding of public health recommendations, applying protective measures against infection with coronavirus, and navigating COVID-19-related health information environments are currently of elevated importance (Paakkari & Okan, 2021), which is why there is a need to explore coronavirus-related health literacy.

The COVID-19 pandemic has caused unprecedented damage to the educational system worldwide. As a result, most countries, including China, which is seen as a credible global health actor (Wu et al., 2020; Zhang et al., 2020), have been implementing strict controls over social gatherings including schools that would anyhow be regarded as a super spreading event (Abdollahi et al., 2020; Auger, 2020). To control COVID-19, proper use of masks, hand hygiene and social distancing have proved extremely useful in most countries (Chu et al., 2020; Goh, 2020; Koo et al., 2020). However, a cross-sectional study that investigated Chinese residents found only 73.90% of residents chose the proper type of mask (Zhong et al., 2020). Another cross-sectional study among primary school students in Wuhan, China which included 9,145 students showed only 51.60% of students practiced appropriate mask wearing behavior (Chen et al., 2020). An observational study involving 1,738 respondents from 190 Chinese cities revealed that high frequency of mask wearing regardless of the presence or absence of symptoms was significantly associated with a lower score of anxiety (Wang, et al., 2020). Little research about health literacy to prevent COVID-19 prevention has been done especially based on the above evidenc, a cross-sectional survey of primary teachers in China during the COVID-19 pandemic to explore the relationships between health literacy to prevent COVID-19 infection and related factors should be conducted.

Teachers should be role models of preventive COVID-19 practices for students. Furthermore, primary schools are more frequently connected to communities or villages than secondary schools, high schools, and universities. Primary schools in Aojiang town, Pingyang county, Zhejiang province, China, must decrease COVID-19 spreading in schools and communities

too. Hence, this research was interested in examining and identifying primary school teachers' health literacy to prevent COVID-19 and related factors in Aojiang town, Pingyang County, Zhejiang province, China. This research will contribute ability of more fully understanding the main factors that affect teachers' health literacy to prevent COVID-19 infection practices in schools. Moreover, these factors will become the main hand in management practice, give some operability suggestions for the COVID-19 preventive practice of primary school students in Aojiang town, China, which can play a very good role of reference.

Research Questions

1. What are health literacy levels to prevent COVID-19 infections during COVID-19 pandemic of primary school teachers in Aojiang town, Pingyang county, China?
2. What are factors influencing health literacy to prevent COVID-19 infection during COVID-19 pandemic of primary school teachers in Aojiang town, Pingyang county, China?

Research objectives

1. To examine health literacy levels to prevent COVID-19 infections during COVID-19 pandemic of primary school teachers in Aojiang town, Pingyang county, China.
2. To analyze factors influencing health literacy to prevent COVID-19 infection during COVID-19 pandemic of primary school teachers in Aojiang town, Pingyang county, China.

Methodology

Method

In this cross-sectional survey study, teachers from 8 primary schools in Aojiang town were selected as research subjects, consisting of 547 teachers.

The sample size was calculated by the formula below:

$N = N / (1 + Ne^2)$

n: sample size

N: population

e: sampling error = 0.05

$n = 547 / 1+ 547 (0.05)^2$

$= 231$

Based on Taro Yamane formula with the receivable error 0.05, the result of sample size from calculation was 231 primary school teachers in Aojiang town, Pingyang county, China. However, the researcher added up the minimum sample size to 300 for improving confidence level. To make every teacher in each school has the same opportunity to be selected as sample, the proportional stratified random sampling method was employed.

Instrument

The test of primary school teachers' health literacy to prevent COVID-19 infection with 29 items was developed covering 3 components. They were functional (6 items), interactive (12 items) and critical (11 items) health literacy. For each item, the answer was right or wrong, the score for right was 1, while wrong was 0. Thus, the total score was 29 (functional health literacy = 6, interactive health literacy = 12, critical health literacy = 11). The meaning and score range of total health literacy to prevent COVID-19 infective level was done as: high (>19 - 29 points), moderate (>9 - 19 points) and low (0 - 9 points). The meaning and score range of functional health literacy to prevent COVID-19 infective level was done as: high (>4 - 6 points), moderate (>2 - 4 points) and low (0 - 2 points). The meaning and score range of interactive health literacy to prevent COVID-19 infective level was done as: high (>7 - 11 points), moderate (>3 - 7 points) and low (0 - 3 points). The meaning and score range of critical health literacy to prevent COVID-19 infective level was done as: high (>8 - 12 points), moderate (>4 - 8 points) and low (0 - 4 points). The quality of instrument was tested. The validity was checked by 3 experts by IOC >= 0.5 in each item. The try-out of 30 teachers was conducted to check reliability. The KR-21 of this test was 0.84.

Data collection and analysis

There were 5 steps of data collections as follows: 1) Formal data collection approval was requested and submitted to the Graduate School, Mahidol University. 2) The researchers contacted the principal of the school for permission. 3) According to the size of the sample, tests and questionnaires were distributed to school teachers. 4) After distributing the questionnaire for one week, the researchers revisited the school to collect the returned questionnaires. 5) The researchers checked whether the test and questionnaire were complete. The health literacy to prevent COVID-19 infection with 29 items average scores were calculated and divided into 3 levels. The statistics were descriptive statistics and t-test with multiple linear regression by SPSS version 26.0 for Windows package.

Results

The scores of health literacy to prevent COVID19 were divided into 3 levels (high, moderate, and low). After the survey, the results showed that the average of total health literacy to prevent COVID-19 infective level was moderate (mean = 10.79, SD= 2.61). Its value was in common of the averages of functional and interactive health literacy to prevent COVID-19 prevention infective level at the moderate level (mean = 2.75, SD= 1.02 and mean = 4.78, SD= 1.53). While the average of critical health literacy to prevent COVID-19 infective level was low (mean = 3.26, SD= 0.73).

According to descriptive statistics, male teachers were 64.70%. The majority of age group was between 21 and 40 years old (79.30%). Most teachers were married (82%). The highest degree of education was undergraduate, accounting for 48.70%. Most of the teachers have taught Chinese language (27.70%). Half of the teachers were general teachers and have taught for 1 to 5 years. Most teachers (70%) have participated in community activities and have planned and been trained

for crisis management. Most teachers (80.30%) were in high level of the perceptions about COVID-19. Social supports about COVID-19 were in the moderate level.

For factors related to preventive COVID-19 practices during COVID-19 pandemic, this study demonstrated that health literacy to preventive COVID- 19 infective levels were significant difference at $p < 0.05$ by education level, work experiences, perceptions about COVID-19 and social supports, while other factors were not significant as shown in table 1.

Table 1 Health literacy to prevent COVID-19 infection by related factors of primary school teachers during COVID-19 pandemic

Factors	No. (%)	Mean	S.D.	T-test (P-value)
Gender				
Male	194 (64.7)	10.78	2.38	0.977
Female	106 (35.3)	10.79	3.00	
Age groups				
21- 40 years old	238 (79.3)	10.84	2.65	0.521
41- 60 years old	62 (20.7)	10.60	2.46	
Marital status				
Married	246 (82.0)	10.85	2.64	0.406
Single and widow	54 (18.0)	10.52	2.49	
Highest education levels				
Technical school & college	139 (46.3)	10.44	2.27	0.032
Bachelor, master & doctor	161 (53.7)	11.09	2.85	
Work experiences				
1 – 5 years	154 (51.3)	10.45	2.29	0.023
More than 5 years	146 (48.7)	11.14	2.88	
Perception about COVID-19				
Low and moderate	59 (19.7)	9.97	2.22	0.007
High	241 (80.3)	10.99	2.66	
Social supports				
Low and moderate	158 (52.7)	10.47	2.70	0.026
High	142 (47.3)	11.14	2.47	

Due to significant related factors (highest education level, work experience, perception, social support), the Pearson's pairwise multiple correlation was analyzed. The significant related factors were perception about COVID-19, social support and work experience as showed in table 2.

Table 2 Multiple correlation coefficients of health literacy to prevent COVID-19 infection and related factors of primary school teachers

Factors	Health Literacy	Perception	Social Support	Education Level	Work Experience
Health Literacy	1.000	0.693**	0.248**	0.024	0.232**
Perception		1.000	0.182	-0.029	0.206*
Social Support			1.000	-0.010	0.060
Education Level				1.000	0.084
Work Experience					1.000

Remark: n =300; * p<0.05; **p<0.01; VIF of Perception, Social support, Education level, Work experience = 1.358, 1.270, 1.135, 1.193

Due to significant correlated factors, the findings were perception, social support, and work experience. The multiple linear regression by forward stepwise method was conducted. The result was shown in table 3. The predictive model of health literacy to prevent COVID-19 infections was: Health literacy to prevent COVID-19 infection = Constant + 0.449 (perception) + 0.222 (social support) + 0.115 (work experience) This model showed the prediction of health literacy to prevent COVID-19 infection by 44.10%

Table 3. Factors influencing health literacy to prevent COVID-19 infections of primary school teachers

Model	Standardized Coeff.	T	Sig.
	Beta		
(Constant)		7.881	<0.001
Perception	0.449	2.633	0.009
Social Support	0.222	2.164	0.031
Work experience	0.115	2.040	0.042

Remark: Adjust R^2 = 0.441

Discussion

It was found that the primary school teachers, as the research sample, in Aojiang town had health literacy to prevent COVID-19 infection at moderate level, with the mean score at 10.79 points from total 29.00 points This was referred that teachers were relatively fair in the health literacy to prevent COVID-19 infection. In the face of the pandemic, it did not quite afford for COVID- 19 pandemic, this might be from COVID- 19 pandemic being a new emerging disease. This finding is related to the study of Silva and Santos (2021).

The different sample primary school teachers' health literacy to prevent COVID-19 infective levels were significantly different by perception, social support, highest education, and work experience groups. These findings indicated that the variations of teachers' health literacy to prevent COVID-19 infection levels were different in variation of perception groups. In the good

perception group, the health literacy to prevent COVID-19 infection was better than the bad perception group. This was relevant to the study of Eronen, Paakkani, Portegijs, & Ratanen (2021). This feature was in common of social support group. This was relevant to the study of Chen et al. (2021). For the different education and working experience groups, the features were also same as perception. This was relevant to the study of Tong (2015).

For multivariate analysis, the findings showed that the influencing factors were perception, social support and work experience. The findings also showed that variation of teachers' health literacy to prevent COVID-19 infection could be predicted by perception, social support and work experience. If the perception was more positive in the COVID-19 pandemic, they could better prevent COVID-19 infection in a crisis by health literacy that is related to the study of Waencwaen et al. (2021) and Eronen, Paakkari, Portegijs, & Rantanen (2021). For social support, the better social support, the better health literacy, this related to the study of Kobayashi and Ishizaki (2020). For work experience, the better social support, the better health literacy, this related to the study of Denuwara and Gunawardena (2017).

Recommendations

1. Teachers who had more perception of COVID-19, tended to better prevent COVID-19 infection with health literacy. Due to the aspect, the schools should promote the perception related to health literacy and COVID-19 learning.

2. Based on the findings, the majority of teachers were undergraduate and less-than-5-year working experience. The schools should plan and define policies to focus these groups.

3. The study was conducted to eight primary schools in Aojiang town, based on the resources and time available. If more townships can be covered, it would be more representative and new findings may be found out.

4. The study was conducted in the primary schools. Further, it is recommended that the researches include another group of sample such as junior school teachers.

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