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Public Knowledge, Attitude, and Practice toward COVID-19 Prevention: a Literature Review

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Abstract

This study aims to review the public knowledge, attitude, and practice toward COVID-19 prevention. Pubmed, Ebscho, and Google Scholar database were used as Data sources of this review. PICOST problem analysis guide was applied to find good journals. The journals used in this study were published between 2020 and 2021. Overall of the public knowledge, attitude, and practice toward COVID-19 prevention were varied and synthesized. Articles' comparisons were complicated because the knowledge, attitude, and practice results were used at various formulas. A more direct intervention is needed to enhance public knowledge, attitude, and practice toward COVID-19 Prevention. Increasing and maintaining good public knowledge, attitude, and practice toward COVID-19 prevention are crucial to cut off the spread of COVID-19.

Keywords: *Knowledge, Attitude, Practice, and COVID-19 prevention,*

INTRODUCTION

Corona Virus Disease 2019 (COVID-19) has become a global problem. COVID-19 is caused by the SARS-CoV-2 virus. Since December 2019, COVID-19 has had devastating effects within a short time (Azlan, Hamzah, Sern, Ayub, & Mohamad, 2020). The World Health Organization (WHO) informed that more than 10 million people in the world died from the virus (WHO, 2020). It shortly becomes a global health emergency. Worldwide misinformation about the virus and much fragile health system, the escalating problems caused by COVID-19 are inevitable (Lau et al., 2020). COVID-19 first appeared in China and then spread rapidly in America, Europe and Iran (Pal & Banerjee, 2020). Then, this virus quickly spread all over the world. COVID-19 effects are mild to severe problems and complications in the respiratory system (Akalu, Ayelign, & Molla, 2020). Furthermore, Akalu et al. (2020) reported that these disorders and complications would cause distress syndrome, septic shock and even death if they are not adequately resolved.

COVID-19 is easily spread between people, especially if an infected person is in close contact with others. The mouth and nose are good media for transmission of this virus. When infected person cough, sneeze, speak, sing or even breathe heavily, tiny liquid particles could quickly spread to other people through the nose and mouth. This condition more likely to happen when the people in close contact within 1 meter apart.

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These liquid particles have different sizes, from larger respiratory droplets to smaller aerosols (WHO, 2020).

It is crucial to prevent the transmission of COVID-19 to avoid the spreading of COVID-19 (Akalu et al., 2020). The prevention can be done with various methods, such as maintaining distance or physical distancing, wearing masks and washing hands with soap and running water (Akalu et al., 2020). However, the virus transmission still occurs with the case increasing occur every day. Poor understanding of the disease has an impact on improving the spread of the virus. Therefore, transmission prevention management is needed.

Awareness to prevent the transmission of COVID-19 is required to minimize the mortality rate in COVID-19 patients. The new habit of maintaining hand hygiene, wearing masks, and maintaining physical distancing plays an important role. However, this new habit could be performed only with the knowledge and perceptions of the patient. Knowledge, Attitude, and Practice (KAP) is an essential public health cognitive key regarding health prevention and promotion. It covers the cause of the disease and exacerbating factors, identification of symptoms, treatments methods and consequences (Ferdous et al., 2020). Nevertheless, to date, public knowledge, attitude, and practice toward COVID-19 prevention gap of results is inconsistent. Moreover, this review of the literature aimed to assess public knowledge, attitude, and practice toward COVID-19 prevention.

RESEARCH METHODS

PICOST (Population, Intervention, Comparation, Output, Study, Time) was applied to collect articles in this literature review strategy. It is detailed below,

Population : Public
Intervention : -
Comparation : -
Output : Knowledge, attitude and practice toward COVID-19 prevention
Study : Cross Sectional
Time : 2020 to 2021

Keywords used for finding the articles were “Public, Knowledge, Attitude, Practice, and COVID-19 prevention”. The database used to search for relevant scientific journals was using the Pubmed, Ebscho, and Google Schoolar databases. The literature criteria consist of inclusion and exclusion criteria. The inclusion Criteria in this study were: journals published from the Pubmed, Ebscho, and Google Schoolar databases, the subjects of this study were the public, journal in English language, cross sectional study, vulnerable research time from 2020 to 2021. While the exclusion Criteria in this study were: the journals do not match the research topic, the journal is not in full text, and the journal cannot be accessed.

The quality or feasibility assessment of the Literature Review uses the JBI Critical Appraisals with a minimum standard value for journals can be used for Literature Review is 50%. Literature quality assessment Review using the technical appraisal tool of Cross Sectional form. The literature data collection process was use PRISMA diagram (see Figure 1)

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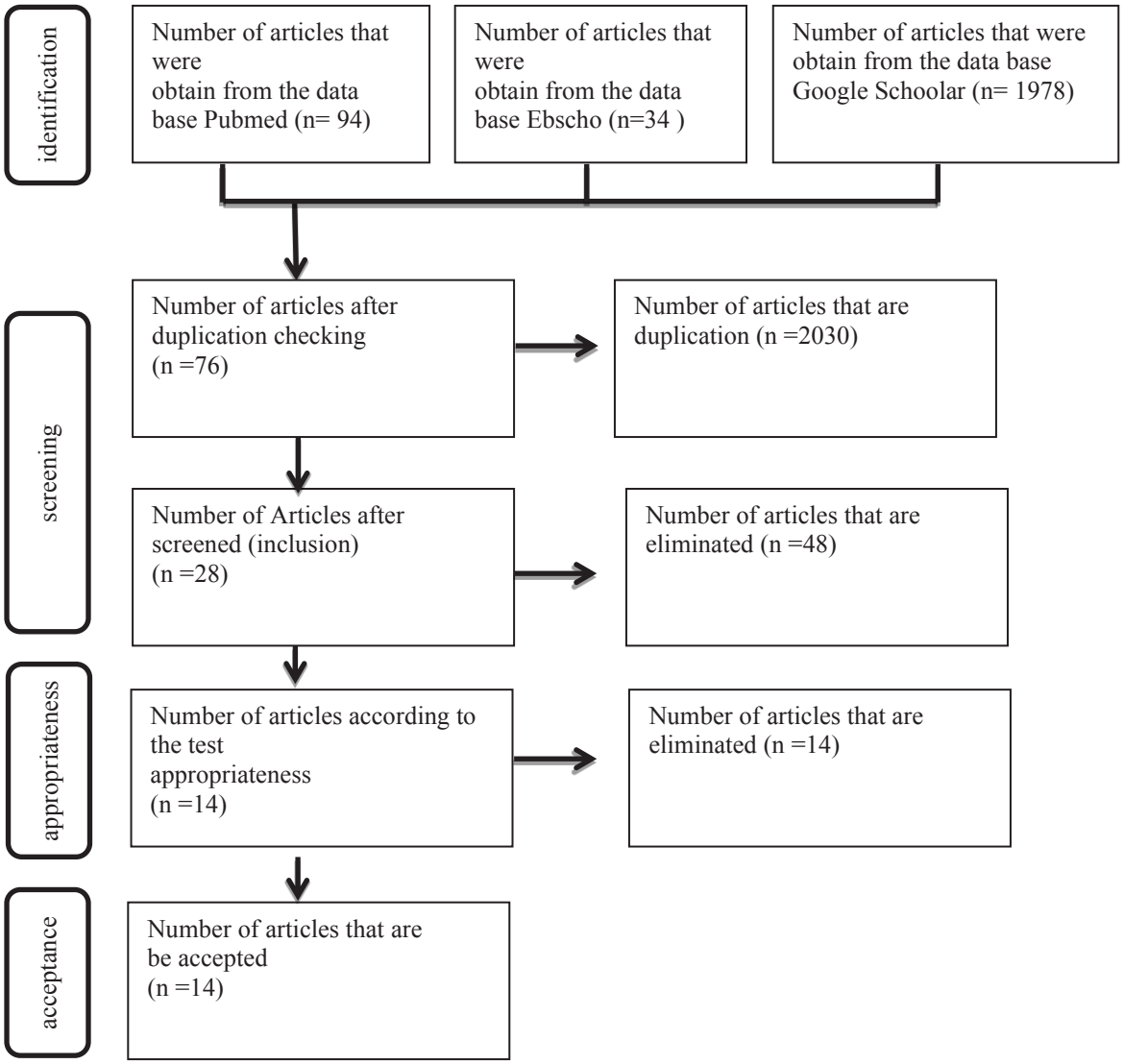

Figure 1. PRISMA diagram for literature review

RESULTS AND DISCUSSION

Results

This review used 14 studies that meets the inclusion criteria. Those were published between 2020 and 2021. The most of studies was conducted in Ethiopia and each one study was conducted in China, Bangladesh, Sudan, Congo, Nigeria, Malaysia, India, Uganda, Korea, Syria, Ecuador, Philippines and Malaysia. The sample sizes ranged widely in 330–4850 participants. All of the studies were cross-sectional study with variety of different sampling techniques including convenience sampling (2 studies), purposive sampling (7 studies), snowball (2 studies), simple random sampling (1 study), and multi stage sampling (1 study). Data collection tool was applied by online (8 studies), face to face offline interview (4 studies), and both (1 study).

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Knowledge, Attitude, and Practice toward COVID-19 prevention

Fourteen studies were used to evaluate public knowledge, attitude, and practice regarding COVID-19 (See Table 1). Because of the tool used on the study using various instruments, the findings include overall knowledge, attitude, and practice and different items of knowledge, attitude, and practice questions. Result obtained from many researches showed that knowledge was on low to moderate level as well as attitude and practice.

Table 1. Public Knowledge, Attitude, and Practice toward COVID-19 Prevention

No	Author (Year) Country, Design	Instruments (including the construct, validity and reliability),	Data collection tools, and data analysis techniques	Results
1	Kartheek, Gara, and Vanamali (2020), India, Cross-sectional, on 751 Indian citizens using Snowball sampling technique	The KAP consisted of questions on the knowledge, attitude and practice of prevention of COVID-19 which embraced (a) Clinical presentation (2 items); (b) Transmission of COVID-19 (2 items); (c) Treatment (3 items); (d) Preventive measures (3 items); (e) Attitudes (4 items) and (f) Practices (4 items). Some knowledge questions had multiple response questions with 1 mark allotted to each correct response. The total COVID-19 knowledge score ranged from 0-22, a higher score indicating better knowledge	Using Google forms, and online semi-structured questionnaire. The survey link was sent through online platforms like WhatsApp, e-mails and Facebook. The descriptive data was expressed as Mean, standard deviation (SD), frequency (n) and percentages (%)	The mean COVID knowledge score was 16.28 (74%), the highest score being 22 (100%). 46% of participants had a score of 80% or above. The accuracy rate for responses was 74%. 87.2%, 84.42% and 90.5% of participants agreed for adequate control, won against COVID-19, and lockdown was an effective containment method. Though 97.6% of respondents agreed about frequent hand washing, only 77.87% confirmed washing hands ≥20 secs. The adherence to social distancing and lockdown restrictions was approved by 97.3% and 97.3%, respectively. 13.18% of respondents agreed for a Hydroxychloroquine purchase.
2	Gebretsadik et al. (2021), Ethiopia, Cross-sectional on 513 hospital visitors at	There were 11 questions assessing knowledge with a true/false basis answer. 1 point for correct answer and for an incorrect answer was assigned 0 point.	Data collection was completed after respondent filling out the questionnaire The descriptive data such as	56.1% of participants answered that fever, cough, shortness of breath, sore throat and muscle pain are not the main clinical symptoms of COVID-19. 212 (41.3%) responded that COVID-19 viral infection could

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No	Author (Year) Country, Design	Instruments (including the construct, validity and reliability),	Data collection tools, and data analysis techniques	Results
	Ataye district hospital using Simple random sampling technique	The knowledge of the participants was categorized, if the score was between 80 and 100% (8.8–11 points) as good, if the score was between 60 and 79% (6.6–8.69 points) as moderate, and if the score was less than 60% (<6.6 points) as poor. The questioner assessing attitude of the participants towards COVID-19 prevention consisted of 9 questions. While, questions assessing practice composed by 9 questions The validity and reliability were tested on a pilot study of 5% of the total sample size (513) on 26 hospital visitors on Kemissie Health Center, which provides similar services as Ataye District Hospital.	frequencies and percentages were calculated for categorical variables and mean with standard deviations for continuous variable	not present on any individual without symptoms. Most study participants, 486 (94.7), answered that individuals should avoid going to crowded places such as market place and avoid taking transportations in the public to prevent COVID-19 transmission. On the attitude questions, most of participants perceived following the latest information of COVID-19. The health care facility and they are prepared for the management of the disease. 486 of the study participants (94.7%) believe that Ethiopian Ministry of Health measures helped them fight COVID-19 outbreak. The number of participants who believe exposing themselves to the sun or higher temperature and eating garlic to prevent the outbreak is not insignificant. Many participants did not have confidence that Ethiopia can prevent and control the COVID-19. 485 participants (94.5%) recently have come to crowded places. 81 participants (15.8%) touch each others for greeting. More than half of them, 266 participants (51.9%), did not wash their hands with soap after touching anything or anyone.
3	Yoseph, Tamiso, and Ejeso (2021), Ethiopia, Cross-sectional on 1,278 adult	Using questionnaire in Sidama language that was prior tested on 5% of an overall calculated sample size among adult population in Kebele.	Data collection was done by respondents filled out a questionnaire distributed by the researcher.	The majority of the adult population 533 (43.9%) had good knowledge about COVID-19, 508 (47.8%) of the study respondents had a low attitude towards the disease, and 542 (44.6%) of respondents had

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	participants in Sidama using Multi-stage sampling technique	12 questions assessing the knowledge of COVID-19, 19 questions were tested to assess the attitude towards the COVID-19 prevention, and 11 questions was assess about the practice of COVID-19 prevention.	The descriptive analyses were done to find out descriptive measures for knowledge, attitude, and practice.	weak practice towards COVID-19 prevention.
4	Ferdous et al. (2020), Bangladesh, Cross-sectional on 2,017 participants aged 12-64 years old using Purposive sampling	19 questions with 6 of knowledge, 6 of attitude, and 7 of practice were used to assess the level of knowledge, attitude, and practice of the participants. The questionnaire was validated by expert validation and reliability was tested by 30 respondents with Cron- bach's alpha of KAP was 0.73.	Online population-based survey was used to assess KAP (Google Forms). The link was shared to public via social media (Facebook and Whats App). The descriptive statistics (frequencies, percentages, means, standard deviations) was used for measure KAP	In regards of knowledge, 48.3% of participants had more accurate knowledge, and 51.7% of respondents had comparatively inaccurate knowledge regarding COVID-19. The results indicated that 62.3% of respondents had more positive attitudes towards COVID-19. In addition, 55.2% of respondents had more frequent practices on the COVID-19 prevention.
5	Gao et al. (2020), China, Cross-sectional. The Kendall sample estimation method was used to calculate the sample. The minimum sample size of participants were required	The Knowledge section consists of 13 questions, the attitude section there was 5 questions, and practice section consisted of 15 questions. The CVI of the questionnaire was found 0.94, and the Cronbach's α value was 0.846.	Conducted by online survey on a special questionnaire survey platform (Wen- juanxing) and the link shared by WeChat. Frequencies and composition ratios were used to describe the categorical data.	The accurate response rate for the knowledge section ranged from 72.7% to 99.5%. The proportion of positive attitudes ranged from 94.7% to 99.7%. The proportion of good practices ranged from 76.1% to 99.5%.

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No	Author (Year) Country, Design	Instruments (including the construct, validity and reliability),	Data collection tools, and data analysis techniques	Results
	to be 10 times the number of variables that was 330 participants, Convenience sampling		The continuous data were described as the means and standard deviations.	
6	Okello, Izudi, Teguzirigwa, Kakinda, and Van Hal (2020), Uganda, Cross-sectional, Sample size calculated by Yamane's formula. 362 participants accepted to join to the research, Purposive sampling	The questionnaire had questions about KAP. It was developed using the Uganda MoH and the World Health Organization (WHO) guidelines on COVID- 19 prevention. The Knowledge section consists of 16 questions, the attitude section there was 5 questions, and practice section consisted of 10 questions. Pilot study was conducted an online in the neighboring country, Kenya.	Conducted by online (KoboToolbox) and share the link via WhatsApp, Facebook, Twitter, and instagram. The descriptive statistic on categorical data using frequencies and percentages and numerical data using means with standard deviations or medians with interquartile ranges (IQR).	No differences in the proportion of knowledge about COVID-19 with consideration to sociodemographic characteristics data. It is observed statistically significant differences in the proportion of positive attitudes on presidential directives and MoH guidelines on behalf of education level (p = 0:019). In spite of the high level of knowledge about COVID-19 among the respondents, overall, less than half of the respondents (48.3%) were adherent to practising the COVID-19 prevention of transmission.
7	Lee, Kang, and You (2021), Korea, Cross-sectional on 970 participants using Purposive sampling	The knowledge was assessed by 6 questions, while attitude and practice were assessed by 2 and 3 questions.	Conducted by online platform (Korea research) the link shared via e-mail or text messages. Descriptive statistic was reported by mean (M), standard deviation (SD), and frequency (percent- age %).	Most participants answered about four of six knowledge items correctly (M = 4.21, SD = 1.16). Participants perceived the risk of becoming infected with COVID-19 (perceived susceptibility) as lower than "neither high nor low" (score = 3) (M = 2.77, SD = 0.80); the average perceived severity score was higher than perceived susceptibility, which was close to "high" (score = 4) (M = 3.77, SD = 0.85). Both efficacy beliefs on preventive measures (M = 3.82, SD = 0.44)

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No	Author (Year) Country, Design	Instruments (including the construct, validity and reliability),	Data collection tools, and data analysis techniques	Results
				and social distancing (M = 3.66, SD = 0.59) were high. The most often performed practice was wearing facial masks (M = 3.82, SD = 0.49), followed by practicing hand hygiene (M = 3.51, SD = 0.66) and social distancing (M = 3.11, SD = 0.90).
8	Azlan et al. (2020), Malaysia, Cross-sectional on 4,850 respondents using Purposive sampling	The knowledge section was assessed by 13 questions, whereas, attitude section as assessed by 3 questions as well as practice section. The Cronbach alpha for knowledge section was 0.655.	Online employ the Survey Monkey plat-form. The link was share by social media. Descriptive analysis was measured by frequencies, and percentages.	The average knowledge score for respondents were 10.5 (SD = 1.4, range 0–13). The overall correct rate of the knowledge section was 80.5%. Most respondents held positive attitudes toward the successful control of COVID-19 (83.1%). Most respondents were also taking precautions such as avoiding crowds (83.4%) and practicing proper hand hygiene (87.8%) in the week before the movement control order started. The face masks wearing was less common (51.2%).
9	Lau et al. (2020), Philippines, Cross-sectional on 2224 respondents using Purposive sampling	The KAP questionnaire consist of 16 questions	Conducted by face to face interviews and all survey data were collected on mobile devices using SurveyCTO, a computer-aided personal interviewing (CAPI) platform which collects responses via an app and stores data in a secure server.	94.0% of participants had already heard of COVID-19. Coughing and sneezing were known as a transmission route by 89.5% of participants, while indirect hand contact was the least commonly identified spread route, recognized by 72.6% of participants . Handwashing was identified by 82.2% of participants as a preventive measure against the virus, but social distancing and avoiding crowds were only identified by 32.4% and 40.6%, respectively. Hand washing was the most common practice in response to COVID-19 prevention, applied by 89.9% of participants

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No	Author (Year) Country, Design	Instruments (including the construct, validity and reliability),	Data collection tools, and data analysis techniques	Results
			Frequencies and proportions were used to describe the participants' knowledge, attitude and practice toward COVID-19 prevention.	
10	Ahdab (2021), Syria, Cross-sectional on 706 respondents using Purposive sampling	KAP questionnaire consist of 6 questions on knowledge section, 4 and 8 questions on attitude and practice section, respectively.	a web-based questionnaire that was posted on the social media (facebook and whats app). Descriptive analysis was measured by frequencies, and percentages.	Overall knowledge score on COVID-19 was about 60% (mean score 3.54 ± 1.20; range 0–6. While, attitude and practice scores were 2.45 ± 0.81 (range 0–4), 5.90 ± 1.52 (range 0–8), respectively.
11	Mohamed et al. (2021), Sudan, Cross-sectional, Sample size was calculated by Open Epi-calculator. 987 respondents were recruited and completely fill the questionnaire. Snowballing sampling	18 knowledge questions, 5 questions for attitude and six questions for practices were used to assess KAP.	Research conducted by posted the questionnaire (Google form) link on social media (facebook and whatsapp). Descriptive analysis was measured by mean, and standard deviation.	The mean (±SD) knowledge score of the respondents was 15.33 (± 2.24) and was found to be correlated with education level and age groups (p-value = 0.022, P-value =0.010). The mean (±SD) attitude score was 04.15 (± 0.97) and was significantly correlate with older groups and better-educated respondents (p-value =0.001, p-value = 0.048) respectively. The COVID-19 mean (±SD) practices were 02.58 (± 1.73) with a significant difference between age groups and area of residence.
12	Kuhangana et al. (2020), Congo, Cross-sectional on	10 knowledge questions, 10 questions for attitude and for practices section measure by	Conducted by face to face interviews. Descriptive analysis was	Two-thirds of the participants did not know about COVID-19 and 60% answered that the COVID-19 pandemic was not present in the DRC. The

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No	Author (Year) Country, Design	Instruments (including the construct, validity and reliability),	Data collection tools, and data analysis techniques	Results
	347 respondents were included using Purposive sampling	researcher observation	measured by frequencies, and percentages.	majority of participants (65%) were unaware of the possible COVID-19 transmission by asymptomatic patients. 13% of the respondents were prepared to visit a COVID-19-infected neighbor or colleague, and 31% would visit an infected family member. 97% respondents reported using public transportation, which in the area consists of generally cramped small minivans. In general, social distancing was not respected, nowhere researcher observe either sellers or buyers washing their hands after reciprocal contacts.
13	Habib, Dayyab, Iliyasu, and Habib (2021), Nigeria, Cross-sectional on 886 participants, using Convenience sampling	The percentage of KAP scores were in good and poor. 25 random respondents was applied to check Validity and reliability of the questionnaire.	Conducted by face to face interviews and online. Descriptive analysis was measured by mean, standard deviation and inter–quartile ranges.	The overall mean [standard deviation] (inter-quartile ranges) for knowledge score was 65.38% [SD 15.90] (IQR: 55.36–77.8%), attitude score was 71.45% [SD 14.10] (IQR: 60.87–82.61%) and practice scores was 65.04% [SD 17.02] (IQR: 57.14–76.19%). 270 respondents (30.47%) had Good Knowledge, 158 (17.8%) had Good Attitude and 230 (25.96%) had Good Practice using cut-off scores of 75%, 86.5% and 75% respectively
14	Bates et al. (2020), Ecuador, Cross-sectional on 2399 participants using snowball and referral sampling	12 knowledge questions, 2 questions for attitude and 3 questions for practices were used to assess KAP.	Conducted by internet-based questionnaire (Qualtrics platform) via Facebook. Descriptive analysis was measured by Frequencies of the answers	Participants had moderate to high levels of knowledge. Participants expressed mixed attitudes about the eventual control of COVID-19 in Ecuador. Participants reported high levels of adoption of preventive practices.

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No	Author (Year) Country, Design	Instruments (including the construct, validity and reliability),	Data collection tools, and data analysis techniques	Results

Discussion

The studies' limitations indicate the need for caution in drawing conclusions and synthesizing information about knowledge, attitude and practice toward COVID-19 prevention. Restrictions in the instrument, as well as methodology aspects of the literature, are worth it.

Knowledge toward COVID-19 prevention

The study conducted in Congo (Kuhangana et al., 2020) and the Philippines (Lau et al., 2020) were found that the level of knowledge was low, and Kartheek et al. (2020) said that the knowledge toward COVID-19 showed by the inadequate result. The possible explanation of the low knowledge of this study might be because of the demographic characteristic like the study by Kuhangana et al. (2020) and Lau et al. (2020) which the traditional media source of information (television and radio) was used. Whereas inadequate knowledge could be due to the myths and misinformation because of fear, blame and stigma recommend that public health practitioners and policymakers promote knowledge and understanding while addressing contextual factors that may hinder the public's learning processes concerning health information to overcome misinformation (Kartheek et al., 2020; Lee et al., 2021). Other reason might be due to the lack access to health care provider and information regarding COVID-19 (Lau et al., 2020).

Moreover, even though they have inadequate knowledge, the proportion of the low level of knowledge were decreased. The reason might be since the current study was conducted after most of the population obtained information about the disease in several ways (Gebretsadik et al., 2021). Gebretsadik et al. (2021) and Yoseph et al. (2021) also stated that it might be due to the study participants getting access to the internet service, which helped them find information about the disease from several sources. Other studies showed that the excellent knowledge of COVID-19 might be due to the study respondents live in urban residence with higher education degree (Gao et al., 2020; Mohamed et al., 2021).

Attitude toward COVID-19 prevention

Many researchers reported that public attitude toward COVID-19 was optimistic (Azlan et al., 2020; Gao et al., 2020; Kartheek et al., 2020; Okello et al., 2020; Yoseph et al., 2021). This is possible because the belief can pass this situation and win against the disease by supporting lockdown decision and following restrictive policies (Kartheek et al., 2020). Efficacy beliefs had a significant and robust impact on practising preventive behaviours, implying promoting preventive behaviours toward COVID-19 (Ahdab, 2021; Azlan et al., 2020; Lee et al., 2021; Okello et al., 2020). It was also possibly due to the media report on the severity of the disease. It made the respondents desire to participate

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actively prevent and control it (Gao et al., 2020). Other studies showed that it might be because the availability of hand washing facilities (Lau et al., 2020; Mohamed et al., 2021). It was suggested that promoting an improved understanding of COVID-19 may also help enhance confidence that COVID-19 finally be controlled (Bates et al., 2020).

On the contrary, Gebretsadik et al. (2021) revealed that the public attitude toward the disease was pessimistic. It could be due to the majority of the respondents having no internet access or living in the rural area so that they have less information about the disease and have financial barriers that would impact their attitude toward COVID-19 (Ferdous et al., 2020; Lee et al., 2021). Other studies revealed that the attitude to wear mask was low (Ahdab, 2021; Mohamed et al., 2021). The result might be that the mask's price was high, no law enforcement, and inconsistent information about wearing the mask in the public area (Mohamed et al., 2021).

Practice toward COVID-19 prevention

The practice of prevention of COVID-19 showed by washing hand. However, due to inadequate knowledge, the people did not follow the regulation of washing their hands more than 20 seconds (Kartheek et al., 2020). The result might be because the respondents have insufficient knowledge that would relate to the practice (Lau et al., 2020; Lee et al., 2021; Yoseph et al., 2021). Another study showed that the low hand hygiene practice was due to a lack of handwashing facilities (Kartheek et al., 2020).

On the contrary, Gao et al. (2020) showed that the respondent in China had good practice regarding COVID-19 prevention, similar to the respondent in Uganda (Okello et al., 2020) and Malaysia (Azlan et al., 2020). The reason might be that the respondent has good knowledge and a positive attitude that applied into good practice (Ahdab, 2021; Gao et al., 2020; Lee et al., 2021). This represents a willingness for respondents to make behavioural changes during the COVID-19 pandemic (Azlan et al., 2020). A study conducted in Ecuador revealed that the respondent has a positive attitude by washing hand more than 20 seconds and maintaining physical distancing about 2 meters from others (Bates et al., 2020).

Regarding Muslim religion, obligations and prayers that Muslims attend and would still go ahead and attend burial rites, Eid prayer and Friday prayer, respectively, despite existing lockdown measures (Habib et al., 2021). These findings all support the need for more communication, community engagement, and local leaders to promote adherence to strict social distancing methods. Religious leaders should be enlightened about the scale of the pandemic and its consequences. Knowledge of transmission of the virus should be communicated clearly, and several misconceptions should be clarified, and rumours promptly dispelled (Habib et al., 2021).

The study's limitation was the differences in measurement and scoring systems do not make it possible for accurate comparisons of knowledge, attitude, and practice levels across these studies.

CONCLUSION

In conclusion, our findings indicate that the respondents were likely to have low to high levels of knowledge, pessimistic to optimistic attitude, and low to good practice related to COVID-19 prevention with different demographic characteristics. Meanwhile, our study findings suggest that formulating appropriate interventions is needed to gain

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public knowledge, attitude, and practice toward COVID-19 Prevention. It is essential to enhance public knowledge, attitude, and practice toward COVID-19 prevention to cut off the spread of COVID-19, particularly among rural, poor, and low education level residents.

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