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### **ABSTRACT**

This study aimed to survey college students' knowledge, attitudes, and practices toward COVID-19 and identify underlying demographic factors that influence them. A cross-sectional quick online survey of 243 students mostly women (66.7%) was carried out between May 1 to May 8, 2020. Results show that 85.5%-86% of the students relied on the internet, social, and mass media as their primary sources of information on the COVID-19 pandemic. 49.9% of the student participants have optimal knowledge of COVID-19 with a 78.5% overall correct response rate on the knowledge test. 97.1% are aware of disease prevention and control measures but only 49.8% are knowledgeable about the disease transmission routes. Participants also hold a very high positive outlook on health and safety protocols and a higher level of practice towards disease prevention. Multiple regression analyses revealed that age and ability to spot fake news are significantly associated with higher levels of knowledge, attitudes, and practices.

**Keywords:** KAP, COVID-19 pandemic, College students, Philippines

### **INTRODUCTION**

The COVID-19 pandemic has posed a global public health threat, with over 245 million confirmed cases and more than 4.9 million deaths reported worldwide as of September 2021 (World Health Organization, 2021a). The Philippines is among the countries affected by the pandemic, with a total of over 2.4 million cases and more than 37,000 deaths as of September 2021 (World Health Organization, 2021b).

The pandemic has also affected the education sector, with schools and universities closed or transitioning to online learning to prevent the spread of the virus. College students have been particularly impacted, with disruptions to their education and daily routines, as well as challenges in adapting to the new learning environment (UNESCO, 2020). Furthermore, as young adults, college students are also more likely to engage in social activities and may be less concerned about their health and safety, making them more susceptible to contracting and spreading the virus (Crawford et al., 2020).

To address the pandemic, knowledge, attitudes, and practices (KAP) toward the virus and its prevention are crucial. KAP studies have been conducted in various populations to assess their awareness and behavior toward COVID-19, including healthcare workers (Huynh et al., 2020), the general public (Ali et al., 2020), and specific age groups (e.g., children and adolescents) (Feghhi et al., 2021; Lin et al., 2021).

Several factors have been identified as affecting KAP towards COVID-19 in different populations. These factors include age, gender, education level, occupation, income, health status, risk perception, social support, trust in authorities, and access to information (Al-Hanawi et al., 2020; Cao et al., 2020; Gupta et al., 2020; Lin et al., 2021; Palaganas et al., 2021; Rugarabamu et al., 2020). Cultural factors, such as beliefs, values, and norms, may also play a role in shaping KAP towards the pandemic (Al-Hanawi et al., 2020; Rugarabamu et al., 2020).

Notably, several studies have examined the KAP towards COVID-19 in different populations in the Philippines. A study among healthcare workers and adult residents in Metro Manila found that the participants had high levels of knowledge but moderate levels of attitudes and practices toward the pandemic (Palaganas et al., 2021). Another study among adults in Cebu City found that the participants had good knowledge and attitudes but poor practices towards the pandemic (Aguila et al., 2020). A study among adults in Batangas province found that the participants had good knowledge and attitudes but poor practices towards the pandemic (Laguador & Martinez, 2020). A study among adult residents in Quezon City found that the participants had good knowledge but poor attitudes and practices towards the pandemic (Santos et al., 2020). However, there is a lack of KAP studies specifically focusing on college students in the Philippines.

Masbate, a province in the Philippines, has reported a total of 1,607 COVID-19 cases and 33 deaths as of September 2021 (Department of Health, 2021). While there have been studies on KAP toward COVID-19 in the Philippines, they have mainly focused on specific regions (e.g., Manila, Cebu) and populations (e.g., healthcare

workers, adults) (Abubakar et al., 2021; Añora et al., 2020; Palaganas et al., 2021). Thus, there is a need to conduct a KAP study specifically targeting college students in Masbate to determine the factors that affect their knowledge, attitudes, and practices toward the pandemic.

Ultimately, the results of this study will provide insights into the current level of awareness and behavior of college students in Masbate, Philippines toward COVID-19 and its prevention. This will aid in the development of targeted interventions and educational campaigns to improve the KAP of college students and ultimately mitigate the spread of the virus.

### Study Objectives

The primary objective of this study is to investigate college students' knowledge, attitudes, and practices toward the COVID-19 pandemic and the factors affecting them. Specifically, this study is guided by the following research questions:

1. What are the students' primary sources of information on the COVID-19 pandemic?
2. What is the knowledge level of college students about COVID-19?
3. What is the level of students' attitudes and practices toward COVID-19?
4. Which demographic factors are associated with students' COVID-19 knowledge, attitudes, and practices?

### Research Hypotheses

1.  $H_0$ : There is no significant difference in the knowledge, attitude, and practice level of college students about COVID-19 in terms of demographic factors.  
 $H_A$ : There is a significant difference in the knowledge, attitude, and practice level of college students about COVID-19 in terms of demographic factors.
2.  $H_0$ : There is no association between demographic factors and students' COVID-19 knowledge, attitudes, and practices.  
 $H_A$ : There is an association between demographic factors and students' COVID-19 knowledge, attitudes, and practices.

## THEORETICAL FRAMEWORK

### Health Belief Model (HBM)

The Health Belief Model (Rosenstock, 1974) posits that an individual's health-related behavior is influenced by their perception of the severity and susceptibility to a health threat, the perceived benefits and barriers of taking preventive actions, and cues to action. In the context of this study, the HBM can help explain how students' knowledge, attitudes, and practices regarding COVID-19 are shaped by their perception of the virus's severity, susceptibility, and the effectiveness of preventive measures.

### Social Cognitive Theory (SCT)

Social Cognitive Theory (Bandura, 1986) emphasizes the role of observational learning, self-efficacy, and outcome expectations in shaping behavior. According to SCT, individuals learn by observing others' behaviors and the consequences of those behaviors. In the context of this study, SCT can provide insights into how students' knowledge, attitudes, and practices toward COVID-19 are influenced by their observations of others, their confidence in their ability to adopt preventive behaviors and their expectations of the outcomes associated with those behaviors.

### Information-Motivation-Behavioral Skills Model (IMB)

The Information-Motivation-Behavioral Skills (Fisher & Fisher, 1992) model proposes that behavior change is influenced by three factors: information about the behavior, motivation to engage in the behavior, and the skills necessary to perform the behavior. Concerning this study, the IMB model can help elucidate how students' knowledge about COVID-19, their motivation to adopt preventive behaviors, and their self-perceived skills in practicing those behaviors contribute to their overall KAP levels.

Drawing from the aforementioned theories, the theoretical framework (see Figure 1) for this study proposes that students' knowledge, attitudes, and practices toward the COVID-19 pandemic are influenced by several factors. The framework suggests that students' primary sources of information on COVID-19 (Objective 1) contribute to their knowledge levels (Objective 2), which, in turn, shape their attitudes and practices (Objective 3). Additionally, demographic factors such as age, gender, perceived health conditions, and ability to identify fake news (Objective 4) may moderate the relationships between knowledge, attitudes, and practices.

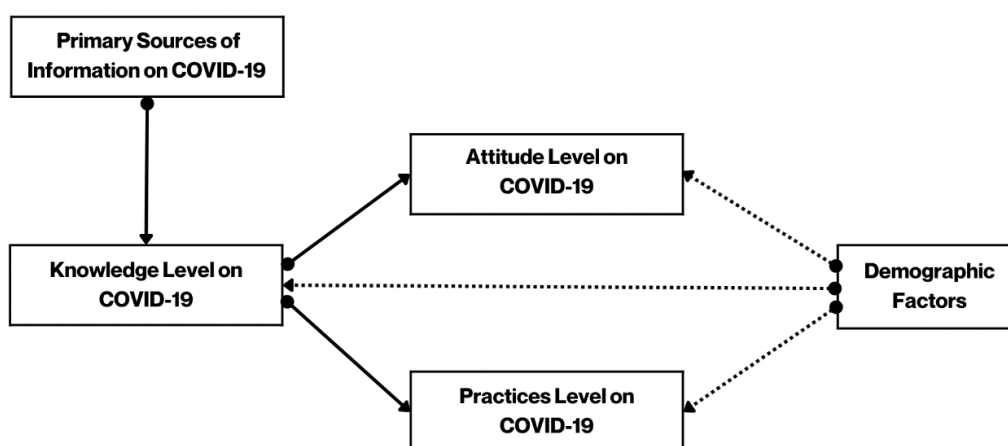


Figure 1: Theoretical Framework

## METHODOLOGY

### Research Design and Sampling Method

This study was a quick online cross-sectional study among college students of Dr. Emilio B. Espinosa, Sr. Memorial State College of Agriculture and Technology (DEBESMSCAT), the only public university in Masbate, Philippines aimed to measure their knowledge, attitudes, and practices level toward the COVID-19 pandemic and the factors that influence them.

A snowball sampling technique was employed in gathering study participants. Using Google Forms, an online semi-structured survey questionnaire was developed, with informed consent. The questionnaire's link was sent to faculty members and students via an online messaging app and their email addresses. Students who received the link were prompted to answer and share the survey link with other students in their networks.

### Instrumentation

The researcher developed a self-reported online survey questionnaire using Google Forms. Items for the questionnaire were adopted and modified from previous studies on KAP (Alzoubi et al., 2020; Roy et al., 2020; Zhong et al., 2020). The instrument has two sections: 1) demographic profile, and 2) students' knowledge, attitudes, and practices (KAP) associated with the COVID-19 pandemic. Demographic factors such as age, sex, college, year level, family monthly income, living with parents, perceive health condition, relative or acquaintances got COVID-19, ability to distinguish fake news, and respondent's primary sources of information were included. The KAP section is composed of 12 items for the knowledge part, 10 items for the attitudes, and 10 items for practices, respectively. The knowledge test focuses on the disease's clinical presentations, transmission routes, and prevention and control. Each question is answerable by True or False with the addition of I don't know option. A correct answer was assigned 1 point and 0 for an incorrect response. The sum of the score for knowledge ranged from 0 to 12, with a higher score suggesting better knowledge of COVID-19. A 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) was used to gauge the attitude level. For the level of practice, a 5-point Likert scale ranging from 1 (never) to 5 (always) was used.

The three instruments were validated initially to ensure the reliability and internal consistency of the constructs. Apart from the knowledge test, which was adopted from Zhong et al. (2020), the other two instruments, namely the attitude and practices scales, were pilot tested on a sample of 50 students. The Attitude scale (Cronbach's  $\alpha = 0.91$ ) and the Practices scale (Cronbach's  $\alpha = 0.87$ ) are statistically reliable and valid for data collection. The results of validation and reliability testing are summarized in the table below:

Measures	Reference	No. of items	Cronbach's $\alpha$
Knowledge Test	Zhong et al., 2020	12	0.71
Attitude Scale	Our sample	10	0.91
Practices Scale	Our sample	10	0.87

### Study Duration

This study was conducted between May 4 and May 8, 2020, which was the first week of the implementation of the General Community Quarantine (GCQ) in Masbate and other provinces in the Philippines classified as low-

risk geographic areas under the President's Executive Order No. 112, series of 2020 issued on May 1, 2020 (Official Gazette, 2020).

### Data Collection Method

The link to the online survey questionnaire was sent to the target respondents via email and mobile messaging apps, i.e., Messenger and Telegram. At the outset of the survey, participants were given an informed consent form to ensure their voluntary participation. The first wave of participants who received the link was instructed to complete the survey and forward the link to their peers and friends enrolled in DEBESMSCAT. After a week of collecting data, they were encoded and cleansed in a spreadsheet.

### Data Analysis

Descriptive statistics such as the frequency, percentage, mean, and standard deviation were used to describe demographic parameters and the level of knowledge, attitudes, and practices of the participants.

The level of attitudes and practices was interpreted using the scale values adopted from studies of Kunwar (2020) and Hero (2020), as presented in the table below:

Scale	Attitude Level	Practices Level
4.50-5.00	Highly positive	Very high
3.50-4.49	Positive	High
2.50-3.49	Neutral	Medium
1.50-2.49	Negative	Very low
1.00-1.49	Highly negative	Low

The knowledge scores, attitudes, and practices of respondents based on demographic factors were compared using appropriate statistical tests, including independent sample t-tests, chi-square tests, or one-way analysis of variance (ANOVA) as applicable. The results of Levene's test and Bartlett's test indicated that the variances were homogeneous across the groups ( $p > 0.05$ ), supporting the assumption of equal variances. Additionally, the Shapiro-Wilk test indicated a normal distribution in the gathered data ( $p > 0.05$ ), allowing for the use of parametric statistics in the analysis.

Multiple linear regression analysis was conducted to examine the factors associated with knowledge, attitudes, and practices (KAP), using all demographic variables as independent variables and the knowledge, attitudes, and practices scores as outcome variables. The significance level was set at 0.05. All data analyses were performed using SPSS version 28.

## RESULTS AND DISCUSSION

### Demographic characteristics

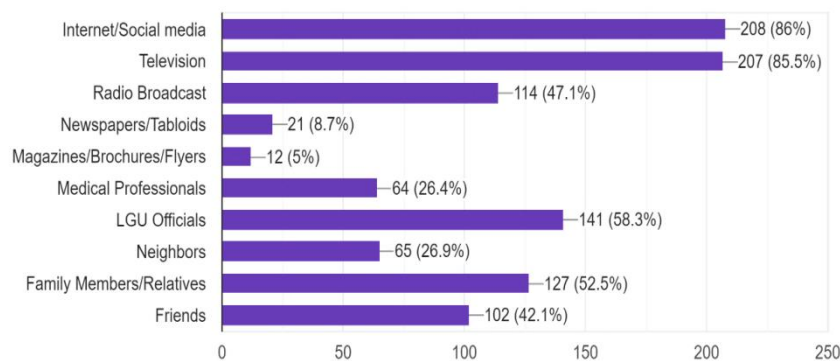
A total of 243 DEBESMSCAT college students participated in the survey. The average age is 21 (SD: 3.42; range: 17-36), 162 (66.7%) are females, 110 (45.3%) are from the College of Education, 123 (50.6%) are first-year students, 186 (76.5%) are living in rural areas, 195 (80.2%) are from families with an annual income of less than 10,000, 208 (85.6%) are living with their parents, 141 (58%) are perceived to be in good health, and 188 (77.4%) can distinguish fake news from the legit one. Other demographic characteristics are shown in Table 1.

### Information sources on the COVID-19 pandemic

As indicated in Figure 2, 208 (86%) of the participants relied on the Internet and social media for information and updates on the COVID-19 epidemic, 207 (85.5%) relied on television coverage, and around 141 (58.3%) received updates from their Local Government Unit (LGU) officials. Conversely, just 21 (8.7%) and 12 (5%) respondents relied on newspapers, tabloids, magazines, and flyers as their sources of information about the COVID-19 pandemic, respectively. These data support prior claims that the internet, social media, and mass media were the key sources of information throughout the community quarantine period when the majority of individuals remained at home (Ahmad & Murad, 2020; Chan et al., 2020; Ko et al., 2020). In addition, local government officials led the transmission of information, staffed by their respective local disaster risk reduction management unit heads and health professionals (CNN Philippines, 2020).

**Table 1: Demographic Profile of the Participants (n=243)**

Variables		Number of participants	Percentage (%)
Sex	Male	81	33.3
	Female	162	66.7
Age group (years)	17-22	205	84.4
	23-28	25	10.3
	29+	13	5.3
College/Campus	Cawayan Campus	9	3.7
	College of Agriculture	45	18.5
	College of Arts and Sciences	37	15.2
	College of Education	110	45.3
	College of Engineering	27	11.1
	College of Industrial Technology	15	6.2
Year Level	1 <sup>st</sup> year	123	50.6
	2 <sup>nd</sup> year	71	29.2
	3 <sup>rd</sup> year	38	15.6
	4 <sup>th</sup> year	10	4.1
	5 <sup>th</sup> year	1	0.4
Area of residence	Rural	186	76.5
	Urban	57	23.5
Family monthly income	₱10,000 and below	195	80.2
	Between ₱10,000 and ₱40,000	41	16.9
	₱40,000 and above	7	2.9
Live with parents	No	35	14.4
	Yes	208	85.6
Perceived overall health condition	Excellent	34	14
	Good	141	58
	Fair	45	18.5
	Poor	23	9.5
A relative or acquaintance got COVID-19	No	239	98.4
	Yes	4	1.6
Has the ability to distinguish fake news	No	55	22.6
	Yes	188	77.4



**Figure 2: Sources of information on the COVID-19 pandemic.**

**Knowledge of the COVID-19 pandemic**

As shown in Table 2, the accurate response rates of the participants on the knowledge questionnaire range from 43.9% to 97.1%. The average score on the knowledge test was 9.42 (SD: 1.72, Range: 1-12), indicating an overall 78.5% (9.42/12\*100) percentage of correct responses. About 49.4% of student participants achieved a score of 10 or higher, which is the most acceptable level of knowledge on COVID-19. Specifically, 97.1% are aware that anyone with possible contact with infected individuals should be detained in an isolated facility for at least two weeks, and 93.1% are aware that this is the most effective method for preventing viral transmission. Additionally, 96% of participants are aware that avoiding crowded settings and using public transportation can help limit the spread of COVID-19. On the other hand, participants' performance on knowledge test questions 2, 4, and 5 is marked by substantial perplexity. Only 49.8% of participants correctly identified that contact with and consumption of wild animals does not result in viral infection. 53.9% of respondents were aware that runny noses, nasal congestion, and sneezing are less likely in COVID-19-infected individuals. Similarly, only 54.3% of respondents correctly identified older individuals and those with pre-existing medical issues as those most prone to develop severe cases.

This low level of knowledge regarding disease transmission and clinical manifestations can be attributed to the widespread dissemination of false information via the Internet and social media, as well as the lack of accessibility of scientific reports from reliable sources such as the Department of Health to the general public (Brennen et al., 2020; Cuan-Baltazar et al., 2020; Palaganas et al., 2021; Quintos, 2020).

**Table 2: Items on the knowledge test (Zhong et al., 2020) and students' correct response rates (n=243).**

Questions	Correct answers rate (%) of the total sample	Options
The main clinical symptoms of COVID-19 are fever, fatigue, dry cough, and myalgia.	90.1	True, false, I don't know
Unlike the common cold, stuffy nose, runny nose, and sneezing are less common in persons infected with the COVID-19 virus.	53.9	True, false, I don't know
There currently is no effective cure for COVID-19, but early symptomatic and supportive treatment can help most patients recover from the infection.	90.9	True, false, I don't know
Not all persons with COVID-19 will develop into severe cases. Only those who are elderly, have chronic illnesses, and are obese are more likely to be in severe cases.	54.3	True, false, I don't know
Eating or contacting wild animals would result in infection by the COVID-19 virus.	49.8	True, false, I don't know
Persons with COVID-19 cannot infect the virus to others when a fever is not present.	76.5	True, false, I don't know
The COVID-19 virus spreads via respiratory droplets of infected individuals.	88.9	True, false, I don't know
Ordinary residents can wear general medical masks to prevent infection by the COVID-19 virus	90.5	True, false, I don't know
Children and young adults don't need to take measures to prevent infection by the COVID-19 virus.	60.9	True, false, I don't know
To prevent infection by COVID-19, individuals should avoid going to crowded places such as train stations and avoid taking public transportation.	96.3	True, false, I don't know
Isolation and treatment of people who are infected with the COVID-19 virus are effective ways to reduce the spread of the virus.	93.0	True, false, I don't know
People who have contact with someone infected with the COVID-19 virus should be immediately isolated in a proper place. In general, the observation period is 14 days.	97.1	True, false, I don't know
Overall Correct Response Rate	78.5	

Using independent samples t-test and one-way ANOVA to analyze differences in knowledge scores across demographic variables, Table 3 reveals that knowledge scores vary significantly based on living with parents, reported overall health status, and the participant's ability to identify fake news. Higher knowledge scores were

reported among individuals who lived with their parents, who regarded their health to be in excellent condition, and who could distinguish between fake news and misleading information.

**Table 3: Demographic characteristics and students' knowledge of COVID-19 (n=243)**

Characteristics		Number of participants (%)	Knowledge score (mean ± standard deviation)	t/F	P-value
Sex	Male	81 (33.3%)	9.22±1.74	1.296	0.196
	Female	162 (66.7%)	9.52±1.70		
Age group (years)	17-22	205 (84.4%)	9.41±1.74	0.045	0.956
	23-28	25 (10.3%)	9.52±1.69		
	29+	13 (5.3%)	9.38±1.50		
College/Campus	Cawayan Campus	9 (3.7%)	9.56±1.33	2.181	0.057
	College of Agriculture	45 (18.5%)	9.02±1.94		
	College of Arts and Sciences	37 (15.2%)	9.03±1.54		
	College of Education	110 (45.3%)	9.77±1.70		
	College of Engineering	27 (11.1%)	9.48±1.42		
College of Industrial Technology	15 (6.2%)	8.87±1.89			
Year Level	1 <sup>st</sup> year	123 (50.6%)	9.28±1.69	1.022	0.396
	2 <sup>nd</sup> year	71 (29.2%)	9.63±1.84		
	3 <sup>rd</sup> year	38 (15.6%)	9.32±1.65		
	4 <sup>th</sup> year	10 (4.1%)	10±1.41		
	5 <sup>th</sup> year	1 (0.4%)	11		
Area of residence	Rural	186 (76.5%)	9.36±1.69	-1.044	0.297
	Urban	57 (23.5)	9.63±1.79		
Family monthly income	₱10,000 and below	195 (80.2%)	9.34±1.74	1.298	0.275
	Between ₱10,000 and ₱40,000	41 (16.9%)	9.73±1.70		
	₱40,000 and above	7 (2.9%)	10±1.0		
Live with parents	No	35 (14.4%)	8.89±1.78	-2.017	<0.05
	Yes	208 (85.6%)	9.51±1.69		
Perceived overall health condition	Excellent	34 (14%)	10.06±1.54	2.582	<0.05
	Good	141 (58%)	9.40±1.64		
	Fair	45 (18.5%)	9.33±1.90		
	Poor	23 (9.5%)	8.83±1.88		
A relative or acquaintance got COVID-19	No	239 (98.4%)	9.42±1.73	-0.089	0.929
	Yes	4 (1.6%)	9.50±1.0		
Has the ability to distinguish fake news	No	188 (77.4%)	8.51±2.22	-4.683	<0.001
	Yes	55 (22.6%)	9.69±1.44		

Analysis using multiple linear regression, as shown in Table 8, also revealed that, among the demographic variables, participants who live with their parents ( $\beta=0.629$ ,  $p<0.05$ ), those with perceived 'excellent' overall health condition ( $\beta=0.662$ ,  $p<0.05$ ), and those who can differentiate between fake and real news ( $\beta=1.182$ ,  $p<0.001$ ) are associated with greater knowledge on COVID-19.



**Attitudes toward the COVID-19 pandemic**

As indicated in Table 4, participants showed extremely positive attitudes toward adhering to health and safety precautions such as wearing face masks and practicing social distancing (M=4.85, SD=0.41), hand washing (M=4.83, SD=0.45), and obtaining quick medical assistance for COVID-19 symptoms (M=4.71, SD=0.57) to prevent contracting the disease.

However, respondents were agnostic that the pandemic will eventually be entirely contained (M=3.83, SD=0.98) and that country has the capacity to stop the spread of the COVID-19 virus (M=3.47, SD=1.02). The former findings are comparable to those of Alzoubi et al. (2020), Al-Hanawi et al. (2020), and Azlan et al. (2020), in which the majority of surveyed participants exhibited strong positive attitudes toward adhering to the health and safety protocols against COVID-19.

**Table 4: Attitude questionnaire items and students' level of attitudes toward COVID-19 (n=243).**

Items	Attitude score (mean standard deviation) ±	Interpretation
Hand washing is necessary to prevent COVID-19 infection.	4.83±0.45	Highly positive
Wearing face masks and following social distancing protocol can help prevent viral transmission.	4.85±0.41	Highly positive
I will not get infected as long as I stay home.	4.55±0.65	Highly positive
Taking vitamins and other food supplements will help prevent infection.	4.57±0.65	Highly positive
COVID-19 is not a stigma, and I shouldn't hide if I get infected accidentally.	4.22±1.05	Positive
I will seek immediate medical attention if I manifest COVID-19 symptoms.	4.71±0.57	Highly positive
The province should prohibit the entry of individuals coming from places with confirmed cases.	4.61±0.73	Highly positive
The government should extend the community quarantine until no vaccine is available.	4.45±0.73	Positive
Our country has the capacity and enough resources to defeat the COVID-19 pandemic.	3.47±1.02	Neutral
COVID-19 will eventually be successfully controlled.	3.83±0.98	Positive

**Table 5: Demographic characteristics and students' attitude scores on COVID-19 (n=243).**

Characteristics		Number of participants (%)	Attitude score (mean standard deviation) ±	t/F	p-value
Sex	Male	81 (33.3%)	43.8±4.09	-1.604	0.110
	Female	162 (66.7%)	44.7±4.03		
Age group (years)	17-22	205 (84.4%)	44.1±4.08	3.064	<0.05
	23-28	25 (10.3%)	42.6±3.80		
	29+	13 (5.3%)	46.0±4.12		
College/Campus	Cawayan Campus	9 (3.7%)	42.4±4.13	1.611	0.158
	College of Agriculture	45 (18.5%)	44.4±5.01		
	College of Arts and Sciences	37 (15.2%)	42.7±4.28		
	College of Education	110 (45.3%)	44.6±3.50		
	College of Engineering	27 (11.1%)	44.0±3.98		
	College of Industrial Technology	15 (6.2%)	44.1±4.27		
Year level	1 <sup>st</sup> year	123 (50.6%)	44.2±3.71	0.657	0.622
	2 <sup>nd</sup> year	71 (29.2%)	44.2±4.58		
	3 <sup>rd</sup> year	38 (15.6%)	43.9±4.39		
	4 <sup>th</sup> year	10 (4.1%)	42.5±3.78		
	5 <sup>th</sup> year	1 (0.4%)	48.0		

Area of residence	Rural Urban	186 (76.5%) 57 (23.5)	43.9±4.07 44.6±4.13	-1.078	0.282
Family monthly income	₱10,000 and below Between ₱10,000 and ₱40,000 ₱40,000 and above	195 (80.2%) 41 (16.9%) 7 (2.9%)	44.1±4.19 44.4±3.61 43.4±4.08	0.212	0.809
Live with parents	No Yes	35 (14.4%) 208 (85.6%)	44.0±4.34 44.1±4.05	0.090	0.928
Perceived overall health condition	Excellent Good Fair Poor	34 (14%) 141 (58%) 45 (18.5%) 23 (9.5%)	43.9±3.70 43.9±3.92 44.6±4.62 44.7±4.63	0.531	0.661
A relative or acquaintance got COVID-19	No Yes	239 (98.4%) 4 (1.6%)	44.1±4.10 45.0±3.16	0.450	0.653
Has the ability to distinguish fake news	No Yes	55 (22.6%) 188 (77.4%)	42.7±5.05 44.5±3.67	2.530	<0.05

As demonstrated in Table 5, the independent samples t-test and one-way ANOVA revealed that attitude ratings differ significantly across age groups and participants' ability to identify fake news. Participants over the age of 29 and those who can discern between fake news and misinformation scored much higher on the attitude scale. Student participants from the College of Arts and Sciences ( $\beta=-1.943$ ,  $p<0.05$ ) and those with the ability to identify fake news ( $\beta=1.851$ ,  $p<0.01$ ) are highly related with more positive attitudes on the COVID-19, as shown in Table 8. The majority of participants from the College of Arts and Sciences were aged 29 or older, corroborating the initial findings.

#### Practices toward COVID-19 pandemic

As shown in Table 6, students displayed a very high level of precautionary practices, including covering their nose and mouth when coughing or sneezing in public ( $M=4.81$ ,  $SD=0.47$ ), frequent handwashing with soap ( $M=4.74$ ,  $SD=0.53$ ), avoiding crowded and public places ( $M=4.70$ ,  $SD=0.68$ ), wearing of face mask and social distancing ( $M=4.65$ ,  $SD=0.63$ ), and regularly watching television, listening to the radio, and browsing the internet for updates on the status of the COVID-19 pandemic ( $M=4.63$ ,  $SD=0.65$ ), and avoiding from touching surfaces (fomites) that might carry the COVID-19 virus ( $M=4.53$ ,  $SD=0.71$ ). Notably, student participants showed a little less positive practices on cleaning and disinfecting frequently touched surfaces in the homes ( $M=4.37$ ,  $SD=0.80$ ), and not touching their faces ( $M=4.21$ ,  $SD=0.85$ ).

**Table 6: Practices questionnaire and level of students' practices on COVID-19 (n=243).**

Items	Practices score (mean ± standard deviation)	Interpretation
I avoid going to crowded places as much as possible.	4.70±0.68	Very High
I regularly wash my hands with water and soap.	4.74±0.53	Very High
I avoid touching my face as much as possible.	4.21±0.85	High
I refrain from handshaking and other forms of greetings that require physical contact.	4.46±0.78	High
I disinfect my hands regularly with hand sanitizers and alcohol.	4.42±0.78	High
I cover my nose and mouth when I cough or sneeze in public.	4.81±0.47	Very High
I wear a mask and maintain 1-meter social distancing while I am in public.	4.65±0.63	Very High
I refrain from touching surfaces (fomites) that might carry the COVID-19 virus.	4.53±0.71	Very High
I clean and disinfect high-touch surfaces daily in household common areas.	4.37±0.80	High

I watch TV, listen to the radio or browse the internet regularly to keep myself updated on the status of the COVID-19 pandemic.	4.63±0.65	Very High
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As indicated in Table 7, independent samples t-test and one-way ANOVA revealed no significant differences in the degree of practice across demographic variables with the exception of the participants' college enrollment. Participants from the Cawayan campus, College of Agriculture, and College of Education demonstrated significantly higher practice scores. These colleges were determined to have students with extremely optimistic attitudes.

Unexpectedly, multiple regression analysis (see Table 8) found that individuals aged 29 and older and students from the College of Arts and Sciences are significantly associated with a higher level of COVID-19-related practices. Notable is the fact that these students had a considerably better attitude score as revealed previously. As documented by Ajilore et al. (2017) and Tachfouti et al. (2012) about the Ebola outbreak and Tuberculosis, the data support the premise that a higher level of attitudes can convert into a higher level of practice.

**Table 7: Demographic Characteristics and Students' Practices on COVID-19 (n=243)**

Characteristics		Number of participants (%)	Practices score (mean ± standard deviation)	t/F	P
Sex	Male	81 (33.3%)	41.2±4.55	0.843	0.400
	Female	162 (66.7%)	40.7±4.34		
Age group (years)	17-22	205 (84.4%)	40.6±4.58	2.826	0.061
	23-28	25 (10.3%)	41.5±3.26		
	29+	13 (5.3%)	43.4±2.22		
College/Campus	Cawayan Campus	9 (3.7%)	41.7±3.87	2.298	<0.05
	College of Agriculture	45 (18.5%)	41.8±4.48		
	College of Arts and Sciences	37 (15.2%)	39.0±5.06		
	College of Education	110 (45.3%)	41.2±4.01		
	College of Engineering	27 (11.1%)	39.8±4.91		
	College of Industrial Technology	15 (6.2%)	40.9±3.58		
Year Level	1 <sup>st</sup> year	123 (50.6%)	40.6±4.19	1.248	0.291
	2 <sup>nd</sup> year	71 (29.2%)	40.6±4.95		
	3 <sup>rd</sup> year	38 (15.6%)	42.0±4.27		
	4 <sup>th</sup> year	10 (4.1%)	41.5±2.84		
	5 <sup>th</sup> year	1 (0.4%)	35.0		
Area of residence	Rural	186 (76.5%)	40.7±4.27	-0.758	0.449
	Urban	57 (23.5%)	41.2±4.84		
Family monthly income	₱10,000 and below	195 (80.2%)	41.1±4.35	2.023	0.135
	Between ₱10,000 and ₱40,000	41 (16.9%)	39.6±4.25		
	₱40,000 and above	7 (2.9%)	40.0±6.30		
Live with parents	No	35 (14.4%)	42.1±4.51	1.841	0.067
	Yes	208 (85.6%)	40.6±4.37		
Perceived overall health condition	Excellent	34 (14%)	42.2±2.87	1.869	0.136
	Good	141 (58%)	40.6±4.39		
	Fair	45 (18.5%)	40.1±5.17		
	Poor	23 (9.5%)	41.4±4.53		
A relative or acquaintance got COVID-19	No	239 (98.4%)	40.8±4.43	-0.538	0.591
	Yes	4 (1.6%)	42.0±2.94		

Has the ability to distinguish fake news	No Yes	55 (22.6%) 188 (77.4%)	40.5±4.85 40.9±4.28	-0.565	0.573
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**Table 8: Results of multiple linear regression of KAP-related factors for COVID-19.**

Variable	Knowledge β (SE)	Attitudes β (SE)	Practices β (SE)
Sex			
Female	0.302 (0.233)	-0.889 (0.554)	-0.506 (0.600)
Age group (years)			
23-28	0.105 (0.365)	-1.501 (0.858)	0.900 (0.927)
29+	-0.030 (0.493)	1.859 (1.158)	2.804 (1.251)**
College/Campus			
Cawayan Campus	-0.217 (0.588)	-2.174 (1.407)	0.467 (1.508)
College of Agriculture	-0.751 (0.300)	-0.263 (0.718)	0.622 (0.770)
College of Arts and Sciences	-0.746 (0.322)	-1.943 (0.771)**	-2.200 (0.827)*
College of Engineering	-0.291 (0.364)	-0.655 (0.872)	-1.385 (0.934)
College of Industrial Technology	-0.906 (0.467)	-0.552 (1.117)	-0.333 (1.197)
Year Level			
1st year	0.357 (0.256)	0.085 (0.610)	-0.077 (0.656)
2nd year	0.039 (0.319)	-0.260 (0.760)	1.321 (0.816)
3rd year	0.724 (0.564)	-1.654 (1.347)	0.874 (1.446)
4th year	1.724 (1.724)	3.846 (4.113)	-5.626 (4.416)
Area of residence			
Urban	0.271 (0.260)	0.666 (0.618)	0.506 (0.668)
Family monthly income			
Between ₱10,000 and ₱40,000	0.393 (0.295)	0.344 (0.704)	-1.468 (0.754)
₱40,000 and above	0.662 (0.660)	-0.618 (1.576)	-1.103 (1.688)
Live with parents			
Yes	0.629 (0.312)**	0.068 (0.748)	-1.475 (0.801)
Perceived overall health condition			
Excellent	0.662 (0.325)**	0.039 (0.783)	1.611 (0.838)
Fair	-0.064 (0.291)	0.728 (0.701)	-0.557 (0.751)
Poor	-0.571 (0.382)	0.780 (0.921)	0.811 (0.986)
A relative or acquaintance got COVID-19			
No	-0.077 (0.867)	-0.929 (2.063)	-1.197 (2.225)
Has the ability to distinguish fake news			
Yes	1.182 (0.253)***	1.851 (0.616)*	0.382 (0.677)

SE: Standard Error; \*\*\*p<0.001, \*\*p<0.05, \*p<0.01

## CONCLUSIONS

While college students in Masbate, Philippines have a relatively high level of awareness about the COVID-19 pandemic, there are major gaps in their understanding of disease transmission and clinical manifestations. The students heavily rely on the internet and social media for information and updates relative to the pandemic, which could explain the prevalence of misinformation.

The study also found that living with parents, perceived excellent overall health conditions, and the ability to differentiate between fake and real news are associated with a greater knowledge of COVID-19. The students generally exhibited strong positive attitudes toward adhering to the health and safety protocols against COVID-19, including wearing face masks, practicing social distancing, and hand washing. However, they were less optimistic about the nation's ability to stop the spread of the virus, which suggests a lack of confidence in the government's handling of the pandemic. Additionally, older participants and those who could differentiate between fake news and misinformation displayed a more positive attitude toward COVID-19.

Overall, the study's findings demonstrate the importance of local leadership in providing accurate and reliable information during times of crisis, as well as the need to combat false information and provide accessible scientific reports to the general public. The results also highlight the critical role of attitude in adherence to

health and safety protocols, suggesting the importance of strategies that address individual attitudes toward COVID-19. The study's results have significant implications for policymakers and public health practitioners as they seek to mitigate the impact of the pandemic and prevent its further spread.

### STUDY LIMITATIONS

This study has some limitations. Firstly, a non-random selection of respondents might introduce bias into the sample. Secondly, the study was conducted at one university in a specific region only, which might limit the generalizability of the findings to other universities or regions. Furthermore, the assessment of students' ability to spot fake news was subjective and there may have been differences in the students' interpretation of what constitutes fake news, which may have influenced their responses. Hence, objective measures for assessing the ability to spot fake news should be used to minimize the potential impact of subjective interpretations. Future studies might consider using a longitudinal study design to investigate causal relationships between variables. Secondly, larger sample sizes and random sampling techniques should be employed to enhance the generalizability of findings. Lastly, future research should consider studying KAP at multiple universities across different regions in the Philippines to increase the generalizability of the findings.

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