Defining Health Literacy on COVID-19 Among Allied Health Students in Higher Education Institutions as their Key Readiness to the Gradual Reopening of Face-to-face Classes

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Abstract *– Defining health literacy is by far one of the crucial elements that evaluate the knowledge and mindset of people concerning how they know their health status. Since the COVID-19 is still under study, little is known about the students' health literacy undertaking medical-related programs. To fill this gap, the research objectives are to provide significant evidence of the health literacy among allied health students that would serve as the basis of their readiness to the resumption of face-to-face classes. To know which among the programs in the higher education institution has higher health literacy on COVID-19. This study aimed to be presented in most colleges to help their decision-making and be an assessment tool in future planning. It used descriptive analysis from a convenience sample of 398 respondents done via randomized stratified allocation that includes all year levels of the allied medical health program in higher education institutions. Weighted means and rankings were used for the measurement of variables comprising aptitude to access online health information related to Covid-19, their knowledge and comprehension of their read information, their appraisal and application of this health information, and assessment of their readiness to the upcoming face-to-face classes. The result showed a high literacy rate among students. The physical therapy program obtained the highest scores using the Post hoc test with a positive association of variables given the p-value of 0.05.*

Keywords – Allied medical health; allied medical programs; Covid 19; health literacy; vaccines.

INTRODUCTION

The corona virus-2019 (COVID-19) affected millions of people across the globe. This outbreak manifested initially in Wuhan, Hubei, China, last December 16, 2019, which has become an imminent threat across countries. This virus is a unique strain among RNA viruses because it is presently not observed in humans before [1]-[2]. The emergence in the Philippines, dated back last January 30, 2020, in Manila, caused the widespread epidemic, the first local transmission traced and reported in Northern Philippines [3].

Concerning this are many damaging effects exhibited, sizable loss of human lives, income, and food security dealt with as the travel bans halted the efficacy of most transactions. It delivers an unprecedented challenge to us all in healthcare, economics, and social services. Insofar in the education sector, notably the postponement of the examinations, closure of schools, and abrupt transition to online learning [4].

In action, efforts to recuperate and lessen the dangers brought by this pandemic, every government assessed the need for community restrictions to stop the spread of the virus, contain the outbreak, and prevent the collapse of the health system [5]-[6]. Vaccine production becomes the imminent potent strategy trust in vaccine safety is a vital element in the significant success of programs on how the public acknowledged and perceived the information given to them [7]. Due to some false accounts on online platforms, vaccine hesitancy observed among Filipinos limits their health literacy [8].

In line with this, predicaments about health literacy among the population have become a due concern. Several published works suggest a direct relationship between limited health literacy to people with a higher rate of diseases, ailments, worsening health status, and health outcomes. There is an important correlation of knowledge on health accounts for low to lack of vaccine uptake to combat illness [9]-[10].

Paakkari and Okran, [11] study on low health literacy stated that it is an underestimated problem in our society for it affects health and decision-making. People's knowledge, drive, ability to access, comprehend, and apply health to make meaningful and reliable judgments in their everyday life [12]-[13]. Claims resulted that even the older the person with low education, income, multi-morbidity, with limitations were all correlated with low levels of health literacy [14]. As described in the *Health Literacy | NNLM* [15], literacy on health is where individuals can obtain, process, and understand simple health information and services they need to make appropriate health decisions. With due interest, this has become a key-role health decision to manage the Covid-19 pandemic here in our country [16]. That is why defining health literacy is a tool in discerning health judgment based on evidence-based facts. Health literacy plays a significant role as a comprehensive notion that deals with the capabilities of people to meet the demands of health in this modern-day society.

The importance of education on health plays a role in gathering information by using an online platform. The research conducted by Abdrbo & Hassanein, [17] primarily revealed the consensus that most young people rely on the internet to communicate their health problems. However, it does not address all dimensions of their lifestyle. Evans et al., [18] suggested that half of the total percentage of students have limited literacy based on health by inadequacy to access health information. Their multivariate logistic regression analysis showed certain factors concerning their literacy on health differed for each gender but commonly included college type, self-esteem, health status, and year of study. Claims of Hassan and Masoud, [19] stated that the mainstream that accounts for 80% of the female adolescent seeks internet for health data compared to the male population, suggests that differences in gender and attitudes affect their means of making essential health decisions. Hence, little is known and published regarding the level of health literacy of students must have supporting evidence.

OBJECTIVE OF THE STUDY

The research's objectives are to provide significant evidence of the health literacy among allied health students that would serve as the basis of their readiness to the resumption of face-to-face classes. To know which among the programs in the higher education institution has higher health literacy on Covid-19. To support, it should answer the following questions on their aptitude to access online health information related to Covid-19, their knowledge and comprehension of their read information, their appraisal and application of this health information, and assessment of their readiness to the upcoming face-to-face classes. This study aimed to be presented in most colleges to help their decision-making and assessment tools in future planning.

MATERIALS AND METHODS

Research Design

The data collection used descriptive analysis from a convenience sample of college-aged adolescents in allied health programs in a higher education institution. Demographic variables include age, sex, program, year level, civil status, race/ethnicity. Measurement variables of their health literacy comprise (1) aptitude to access online health information related to Covid-19 (2) their knowledge and comprehension of their read information (3) their appraisal and application of this health information, and (4) assessment of their readiness to the upcoming face-to-face classes.

Respondents of the Study

A randomized stratified proportional allocation was used as the sampling method to the total of 398 respondents that include all year college levels of the allied health program for Medical Laboratory Science (Medical Technology), Nursing, Pharmacy, Radiologic Technology, Dentistry, and Physical therapy from the first year to the fourth year. Male and female with corresponding ages of 15-25 in Lyceum of the Philippines University Batangas and Laguna campuses.

Data Instrument

The main instrument adapted the study of Abel et al., 2015 [20]. Questions based on 4-point Likert-scale items subjected to liability and suggestions. The first part of the questionnaire accounts for the short introduction of the survey with the corresponding informed consent to participate in the study. The second part of the questionnaire accounts for the demographic determinants discussing the age, sex, race/ethnicity, year level they are in, and civil status. The last part of the questionnaire provides the health-related questions of

how they acquire the information they need for proper decision-making using online platforms. Focuses on their aptitude to access online health information, their gained knowledge and comprehension, and their assessment and application of health evidence. Each of these categories contains 5 item question parameters to be answered on a 4-point Likert scale.

Procedure

The demonstration procedure for this research used the online distribution of surveys via Google forms and letters of intent sent to their respective e-mails and Facebook messenger accounts. Questions were checked and undergone reliability testing by a professional to assess their authenticity. Pilot testing was conducted before the actual dissemination and validated by an expert.

Data Analysis

To perform data analysis, the following statistical tools were used. Frequency and percentage distribution were used to describe the demographic profile of the respondents. Weighted means and ranking were used to student's aptitude to access, how each student perceived the quality of online health information based on knowledge and comprehension, how they trust online health information through assessment and application of health evidence. The data were subjected to normality testing using Shapiro-Wilk Test. Independent Sample t-test/Mann-Whitney U test for two groups and Analysis of Variance /Kruskal Wallis test for three groups was used as part of the parametric and non-parametric tests to determine the significant differences. Likewise, Pearson Product Moment Correlation /Spearman rho was used to test the significant relationship between variables. Also, all data were treated using statistical software known as PASW version 26 to further interpret the result of the study using an alpha level of 0.05.

Ethical Consideration

To ensure ethical considerations, the online survey is voluntary in participation with informed consent noted. It was approved by the Ethical Research Review Committee at Lyceum of the Philippines University Batangas.

RESULTS AND DISCUSSION

Table 1 indicates the distribution of participants in their age group, many from 20-21 years old followed by 18-19, and least belongs to 22 years old and above. Most who have answered were females than males and were single. The mainstream is of Asian and Filipinos, with only 1 American. Among the programs who answered the survey lead belong to the Medical Technology/Medical Laboratory Science program with the highest percentage in the 3rd year level, followed by the 1st year, and last is the 2nd year.

Table 1 *Respondents Profile*

Age	**f**	**(%)**
18 – 19 years old	145	36.40
20 – 21 years old	237	59.50
22 years old and above	16	4.00
Sex		
Male	69	17.30
Female	329	82.70
Civil Status		
Single / Single Parent	398	100.00
Race		
Filipino	350	87.90
Asian	47	11.80
American	1	0.30
Program		
Medical Laboratory Science (Medical Technology)	221	55.50
Nursing	69	17.30
Pharmacy	51	12.80
Radiologic Technology	27	6.80
Physical Therapy	16	4.00
Dentistry	14	3.50
Year level		
1st year	140	35.20
2nd year	97	24.40
3rd year	161	40.50

Table 2 *Health Literacy on Covid-19 in terms of Aptitude to Access Online Health Information*

Indicators	WM	VI	Rank
1. I use the internet in asking Covid-19 health-related questions.	3.50	Always	3
2. I use social media platforms like Facebook, Instagram, Twitter, and the likes to access information related to Covid-19.	3.52	Always	2
3. I use other online search platforms like Google, Bing, OneSearch, and the likes to access information related to health.	3.58	Always	1
4. I still read online news and other journals on health.	3.18	Often	5
5. I seek COVID-related information on sites like DOH, CDC, WHO.	3.45	Often	4
Composite Mean	**3.45**	**Often**	

Legend: 3.50 – 4.00 = Always; 2.50 – 3.49 =Often; 1.50 – 2.49 = Sometimes; 1.00 – 1.49 = Never

Table 2 presents the health literacy on COVID-19 in terms of aptitude to access online health information. The composite mean of 3.45 indicates that respondents often practiced the above indicators. Among the items cited, other online search platforms like Google, Bing, OneSearch, and the likes used to access information related to health got the highest weighted mean of 3.58, which means that it was the well-practiced indicator among the rest. Meanwhile, social media platforms like Facebook, Instagram, Twitter, and the likes to access information related to COVID-19 got the second-highest weighted mean score of 3.52, which suggests that it placed second to the most practiced indicator. Supported that they always use the internet in asking COVID-19 health-related questions (3.50).Therefore the majority of the respondents have access to social media sites and online search platforms. However, the indicator to seek COVID-related information on sites like DOH, CDC, WHO, reading online news, and other journals on health rated 3.45 and 3.18, implies they still often practice these indicators

Table 3 *Health Literacy on Covid-19 in terms of Knowledge & Comprehension of online health information*

Indicators	WM	VI	Rank
1. I understand the information related to COVID-19 based on my search	3.56	Always	2
2. I am satisfied with the answer I have gathered on the internet regarding the COVID-19 pandemic	3.24	Often	4
3. I am satisfied with the information that I gathered on social media platforms e.g., Facebook, Instagram, Tiktok, Twitter, etc.	2.88	Often	5
4. I am satisfied with the information that I gathered in other online search platforms like Google, Bing, OneSearch, and the likes regarding COVID-19	3.25	Often	3
5. The information helped me a lot with my queries and concerns about COVID-19 in its prevention and transmission.	3.68	Always	1
Composite Mean	3.32	Often	

Legend: 3.50 – 4.00 = Always; 2.50 – 3.49 =Often; 1.50 – 2.49 = Sometimes; 1.00 – 1.49 = Never

Table 3 represents the health literacy on COVID-19 in terms of knowledge and comprehension of online health information. The composite means of 3.32 signifies that the respondents often performed the above indicators. With the highest ranking of 3.68, most online health information helped them with their queries and concerns about COVID-19, especially in its prevention and transmission. Further that they understand the information related to COVID-19 based on their search. They were often satisfied with what they gathered on most internet search engines like Google, Bing, OneSearch, and the likes. This further supports their likeness to using online search platforms as their main tool. The weighted rank of 2.88 means their satisfaction with the information they have seen on social media was low, mainly due to the accumulation of fake news on these sites.

Table 4 *Health Literacy on Covid-19 in terms of Appraisal and application of health information*

Indicators	WM	VI	Rank
1. Regarding the information on health on the internet. I can determine which sources about COVID-19 are of high and which are of poor quality.	3.48	Often	1
2. When I want to do something for my health without being sick with COVID-19, I know where I can find information on these issues.	3.43	Often	3
3. I still seek the advice of the physician regarding the procurement of the COVID-19 vaccine following my internet search.	3.34	Often	4
4. Whenever I have questions concerning COVID-19 health issues, I can rely on advice from others (family & friends)	3.05	Often	5
5. When I have questions on diseases or complaints regarding COVID-19. I know where I can find information on these issues.	3.45	Often	2
Composite Mean	**3.35**	**Often**	

Legend: 3.50 – 4.00 = Always; 2.50 – 3.49 =Often; 1.50 – 2.49 = Sometimes; 1.00 – 1.49 = Never

Table 4 denotes the health literacy on COVID-19 in terms of appraisal and application of health information. The garnered composite mean of 3.35 indicates that the respondents often practiced the indicators. Preferably they know which health information on the internet has high and poor quality from the weighted mean of 3.48. They also know where to find information on issues about their health related to COVID-19 without them being sick as seen on their weighted mean of 3.43. They also know where to find information on diseases and complaints regarding COVID-19 based on their rank of 3.45. Supported by the mean of 3.34, they still want to seek a doctor's guidance on getting the vaccine for COVID. The least favored question was their reliance on advice from others whenever they have questions related to COVID-19 health issues as stated with the mean of 3.05.

Table 5 Health Literacy on Covid-19 in terms of Readiness to the Upcoming Face-to-Face Classes

Indicators	WM	VI	Rank
1. With the information that I have gathered and read online. I am confident to go with the face-to-face resumption of classes in our school.	2.88	Often	5
2. I fully understand the COVID-19 risks as well as the preventive practices needed concerning the information disseminated online.	3.65	Always	1
3. I trust the arrangement and interventions made by our respective schools and colleges on the resumption of classes in a higher education institution.	3.21	Often	2
4. I trust the arrangement and interventions made by our local government and COVID task force on the resumption of classes in HEI facilities.	3.01	Often	4
5. I trust the health information on COVID-19 that has been disseminated online.	3.16	Often	3
Composite Mean	**3.18**	**Often**	

Legend: 3.50 – 4.00 = Always; 2.50 – 3.49 =Often; 1.50 – 2.49 = Sometimes; 1.00 – 1.49 = Never

Table 5 health literacy on COVID-19 in terms of assessment for readiness for the upcoming face-to-face classes. An average composite means of 3.18 signifies that the respondents often do the above indicators. As stated in the table the first rank denotes that they have fully understood the risks, preventive measures needed concerning the information disseminated online. Secondly, they trust the arrangements and interventions of the school in terms of their readiness to push through face-to-face learning. Thirdly, they trust the health information that is disseminated online. Also, they trust the arrangement and interventions made by the local government concerning COVID-19 preventive measures. Although, the lowest rank was noted on their confidence to go forth with the face-to-face resumption of classes plausibly due to lacking intervention and COVID-19 restrictions.

Table 6 shows the summary on Health Literacy on COVID-19 with the composite mean of 3.32, which suggests that often the students have an orientated practice of the indicators.

Table 6 *Summary Table on Health Literacy on Covid-19*

Indicators	WM	VI	Rank
1. Aptitude to access online health information	3.45	Often	1
2. Knowledge and Comprehension of online health information	3.32	Often	3
3. Appraisal and application of health information	3.35	Often	2
4. Assessment for Readiness to the Upcoming Face-to-Face Classes	3.18	Often	4
Composite Mean	**3.32**	**Often**	

Legend: 3.50 – 4.00 = Always; 2.50 – 3.49 =Often; 1.50 – 2.49 = Sometime; 1.00 – 1.49 = Never

The aptitude to access online health information, obtaining a weighted mean of 3.45, proposes that students who often access information online have inclined to understand the context of online health information that supports their knowledge and comprehension of online health information with a weighted mean of 3.32. According to the computed weighted mean of 3.35. Their appraisal and application of health information imply they often know how to evaluate these online data and know where to use the online health information. Nevertheless, the assessment for readiness to the upcoming face-to-face classes had the lowest weighted ranking among the markers with a weighted mean of 3.18.

Table 7 presents the comparison of health literacy on COVID – 19 when grouped according to profile. It observed a significant difference when grouped according to the program since the obtained p-values were less than 0.05 alpha level. The result reveals that the responses differ significantly based on the post hoc test. It resulted that Physical Therapy students have garnered a better assessment of health literacy. However, this does not undermine the relevance of the study associated with the other programs. Another factor is the number of respondents in a particular program who answered the survey.

Table 7 *Difference of Responses on Health Literacy on Covid-19 When Grouped According to Profile*

Age	**U / λ^2_c**	**p-value**	**Interpretation**
Aptitude to access online health information	10328.5	0.233	Not Significant
Knowledge and Comprehension of online health information	10978	0.664	Not Significant
Appraisal and application of health information	10264	0.206	Not Significant
Assessment for Readiness to the Upcoming Face-to-Face Classes	10460	0.302	Not Significant
Sex			
Aptitude to access online health information	1.133	0.568	Not Significant
Knowledge and Comprehension of online health information	2.095	0.351	Not Significant
Appraisal and application of health information	3.641	0.162	Not Significant
Assessment for Readiness to the Upcoming Face-to-Face Classes	1.35	0.509	Not Significant
Race			
Aptitude to access online health information	14.228	0.014	Significant
Knowledge and Comprehension of online health information	17.417	0.004	Significant
Appraisal and application of health information	21.364	0.001	Significant
Assessment for Readiness to the Upcoming Face-to-Face Classes	20.485	0.001	Significant
Program			
Aptitude to access online health information	2.814	0.245	Not Significant
Knowledge and Comprehension of online health information	0.966	0.617	Not Significant
Appraisal and application of health information	2.767	0.251	Not Significant
Assessment for Readiness to the Upcoming Face-to-Face Classes	0.948	0.623	Not Significant
Aptitude to access online health information			
Year Level			
Aptitude to access online health information	1.017	0.601	Not Significant
Knowledge and Comprehension of online health information	2.328	0.312	Not Significant
Appraisal and application of health information	0.582	0.747	Not Significant
Assessment for Readiness to the Upcoming Face-to-Face Classes	1.102	0.576	Not Significant

Legend: Significant at p-value < 0.05

CONCLUSION AND RECOMMENDATION

The study on health literacy on COVID-19 among the allied health students answered the assumptions that students have high literacy rates concerning COVID-19, which was supported by tables 2, 3, 4, and 5. Physical therapy students emerge to have better literacy among the respondents examined in table 7. The measured statistics based on how they collect, perceive, evaluate, and use these COVID-19 online health information in their readiness for the upcoming face-to-face resumption of classes were often practiced. Even though lower marks were observed in the tables, the overall composite mean suggested that they often practice the said indicators.

The respondents range from 1st to 3rd year respectively due to the gap in the enrollment of 2010 up to this date supported by the integration of the mandated K-12 basic education program of the Philippine government [21]. The study was limited only to the participants of the Lyceum of the Philippines University, Batangas, and Laguna campuses. It would be better to accommodate a larger group of participants for an enhanced survey.

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