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Level of self-medication awareness to internet usage among selected, non-medical students in Centro Escolar university-Manila during COVID-19 pandemic

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Abstract

Self-medication is the act of using accessible substances to treat self-diagnosed health conditions. Due to ubiquitous access and innovations of smartphones, the internet has become more accessible than before. Hence, the internet has become a significant source of health-related information, leading to increased and uncontrolled internet self-medication. Additionally, because non-medical students typically have a higher level of education and ability to find online health resources, they are more likely to self-medicate. Thus, the purpose of the study was to verify the level of self-medication awareness to internet usage among selected, non-medical students from different colleges in Centro Escolar University-Manila during the COVID-19 pandemic, specifically the School of Accountancy and Management, School of Education, Liberal Arts, Music, and Social Work, School of Nutrition and Hospitality Management, and School of Science and Technology. The study applied a descriptive method and employed random sampling with a sample size of 327 respondents, using Slovin's formula. The research instrument used was survey questionnaires. After conducting the validity and reliability testing, the self-made questionnaire in Google forms was distributed to the respondents using their institutional email addresses. Results of the study have shown that there is a significant difference in self-medication awareness based on the respondents' sociodemographic profiles, particularly their sex, year level, and degree program. Current findings also showed no significant relationship between the extent of internet usage and the level of self-medication awareness among the respondents.

Keywords: Influence; Internet Usage; Self-medication Awareness; Non-medical students; COVID-19 Pandemic; Centro Escolar University-Manila

1. Introduction

The Covid-19 pandemic forced the world to undergo lockdowns, which led to people's inert movements even when they do medical services. Along with this, new types of platforms where people can gain information such as TikTok and the like were popularized. Due to the easy access to data through the internet, many have used self-medication. Self-medication is taking drugs without a prescription from a doctor, wherein it is a global public health concern, particularly in low-income countries. Although self-medication might save time and money, it also has hazards associated, such as antibiotic resistance or improper management leading to complications [1]. One of the studies showed that almost 60% of people who self-medicate use the internet as a source, and the majority (54.47%) took medications without consulting doctors [2]. The prevalence of self-medication was 69.0% among nonmedical students, whereas headache was the predominant ailment for which the medications were used. Non-medical students tend to self-medicate as they reside farther than their university hospital [3]. Due to the rise of the internet regarding the availability of information

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about various drugs, public confusion and panic have increased. This situation has also led to the increased practice of self-medication [4]. It is reported that the risk of self-medicating (especially in serious health conditions) includes incorrect diagnosis, increased risk of drug interactions, dependence, and abuse [5]. The study aims to verify the level of self-medication awareness and internet usage among selected non-medical, undergraduate students of Centro Escolar University-Manila during the COVID-19 pandemic.

2. Material and methods

2.1 Study Design

The study used a quantitative research design through the distribution of self-made questionnaires online. The conceptual framework used in the study contained three parts: input, process, and output. Input consisted of the dependent variables and independent variables. Self-medication awareness was the dependent variable, while internet usage was the independent variable. The process involved determining the internet usage on self-medication awareness in non-medical students in which the researchers prepared questionnaires, asked permission to conduct and distribute the questionnaire, gathered the respondents, disseminated the said questionnaire via students' email, collected the data, and analyzed it afterward. For output, the researchers then determined the level of self-medication awareness to internet usage among non-medical students in Centro Escolar University-Manila during the COVID-19 pandemic.

2.2 Research Instrument

The research instrument used in the study is a questionnaire. It was composed of three sections. The first section consisted of the respondent's demographic profile. The second section consisted of 11 questions about the extent of internet usage in self-medication. 10 out of 11 questions include a 5-point Likert Scale while one question was a nominal scale**.** The third section consisted of 13 questions about the level of self-medication awareness which had a nominal scale and yes/no questions. The three-part questionnaire was developed by the researchers. Thus, it was subjected to reliability and validity testing. All questions were answered by selected professionals and students outside Centro Escolar University-Manila. The 10 students, selected by the researchers for reliability testing, answered the 10 5-point Likert scale questions. To obtain the result for reliability testing, Cronbach's alpha was used. The result for the 10-items 5-point Likert Scale was 0.8 which was interpreted as good. On the other hand, the dichotomous yes or no questions had a result of 0.50 and were interpreted as unacceptable. Moreover, the panelist, a registered pharmacist, and a statistician were the 3 selected professionals to validate the questionnaire.

The validated questionnaire was sent to the respondents of the study through their respective institutional email accounts. Google Forms was used for faster dissemination of the questionnaire.

2.3 Respondents of the study

The chosen respondents of the study are students from selected schools in Centro Escolar University-Manila enrolled in the second semester of Academic Year 2021-2022. These schools are namely School of Accountancy and Management, School of Education, Liberal Arts, Music, and Social Work, School of Nutrition and Hospitality Management, and School of Science and Technology.

2.4 Population size and Sampling Technique

The names of the students are obtained from the master list given by the Office of the University Registrar, and were manually input into Microsoft Spreadsheet. The total number of students listed is 1,791. Then, Slovin's formula was used to determine the sample size of the population. Using the formula, the researchers came up with 327 respondents. The sampling technique used in this study was random sampling. Respondents were randomly selected from the obtained master list.

2.5 Data Collection

The researchers distributed the self-made questionnaire via email using the CEU Gmail platform to the randomly selected participants. Distribution was done during school hours for 2-3 weeks. Data analytics produced by Google forms based on the responses were retrieved, confidentially kept, and analyzed afterward.

2.6 Statistical Treatment

The researchers utilized percentage, frequency, rank, weighted mean, Chi-square test of independence, and Spearman correlation for the data interpretation. The researchers employed the use of percentage, frequency, and rank to describe

the demographic profile of the respondents relying on the internet for self-medication, while the weighted mean was used to describe the extent of internet usage in self-medication awareness and the level of self-medication awareness of the respondents. Chi-square test of independence was considered for the test of differences in self-medication awareness based on the respondent's profile, while Spearman correlation was utilized for the test of association between the extent of internet usage and the level of respondent's self-medication awareness.

3. Results

3.1 Sociodemographic Profile of Respondents

3.1.1 Sex

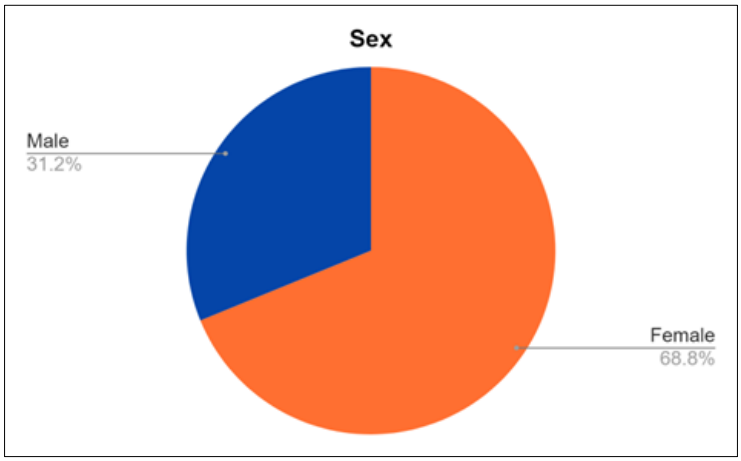

Figure 1 Distribution of Respondents based on Sex

3.1.2 Age

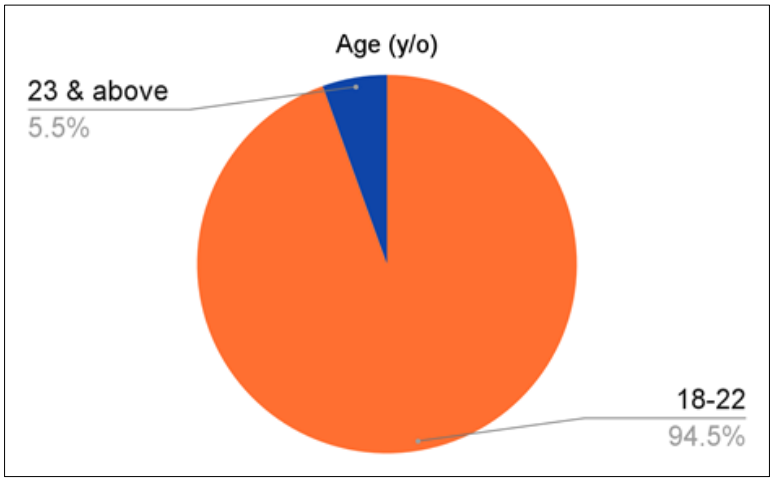

Figure 2 Distribution of Respondents by Age

3.1.3 Year Level

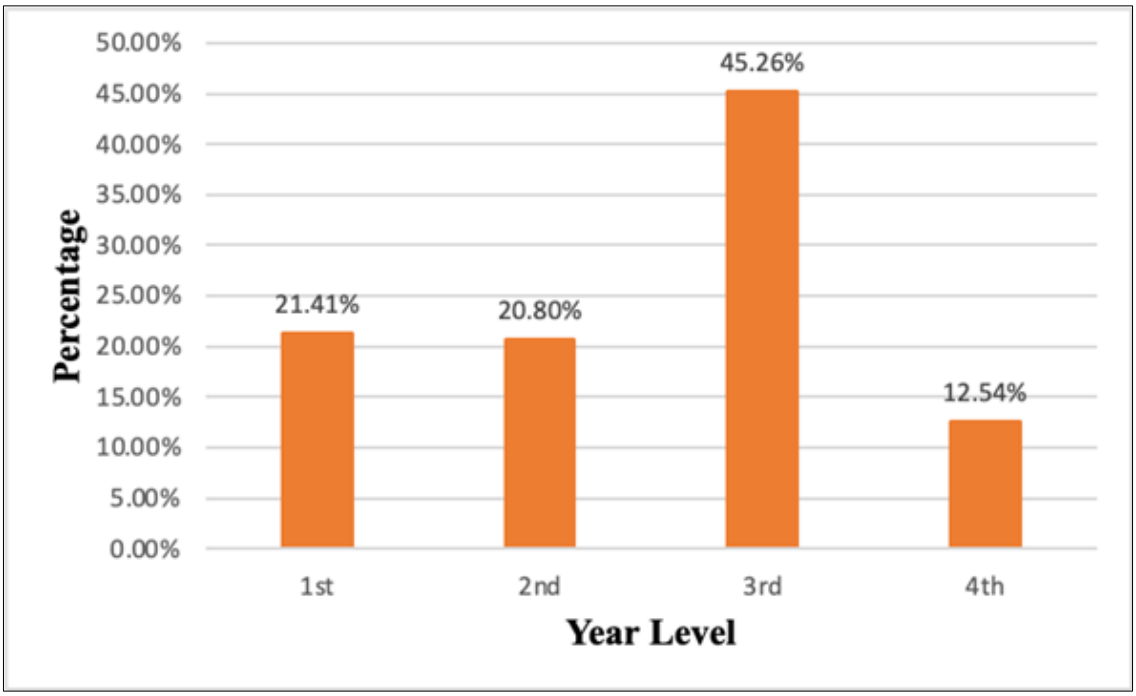

Figure 3 Distribution of Respondents by Year Level

3.1.4 Degree Program

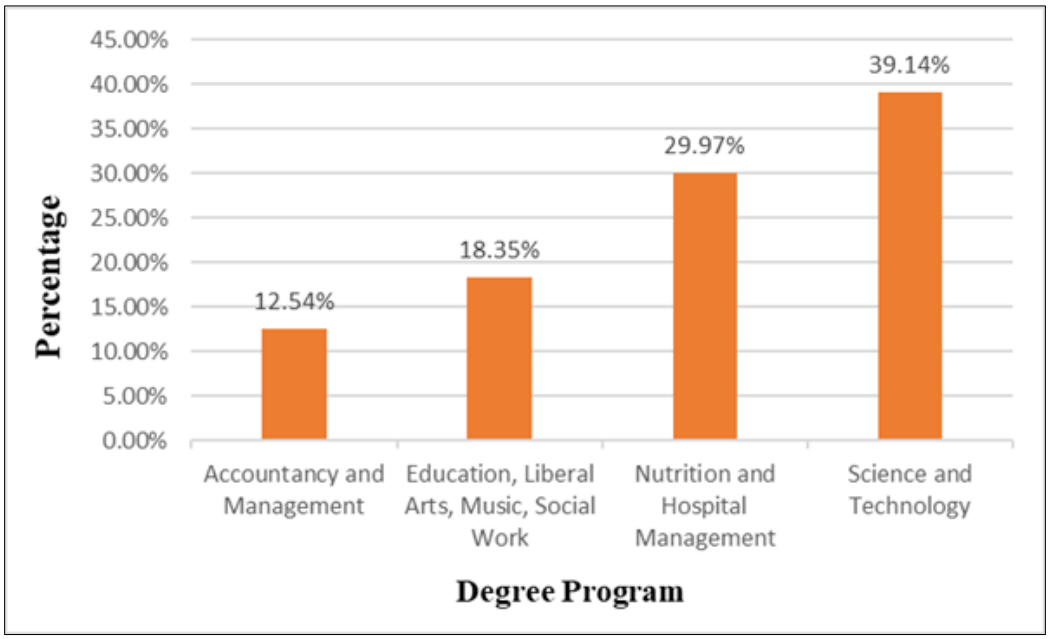

Figure 4 Distribution of Respondents by Degree Program

3.1.5 Place of Residence

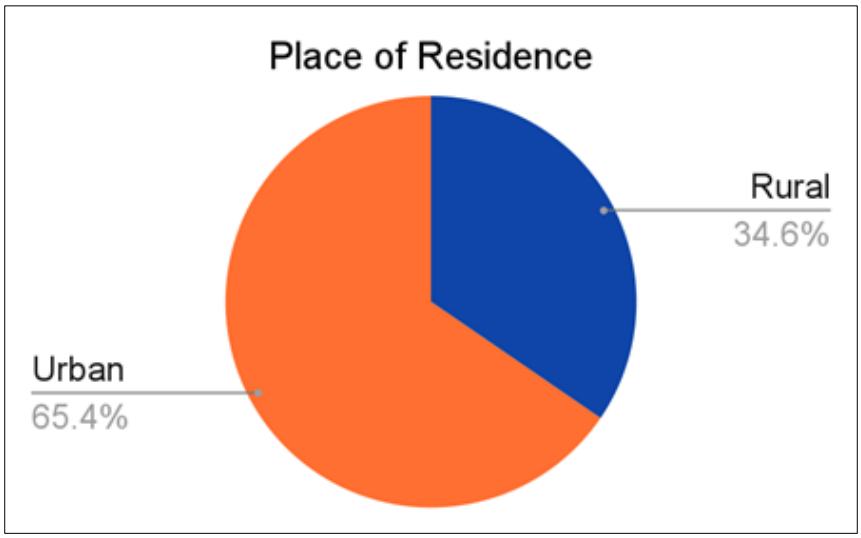

Figure 5 Distribution of Respondents by Place of Residence

3.1.6 Most commonly used site/applications the respondents often use for health information

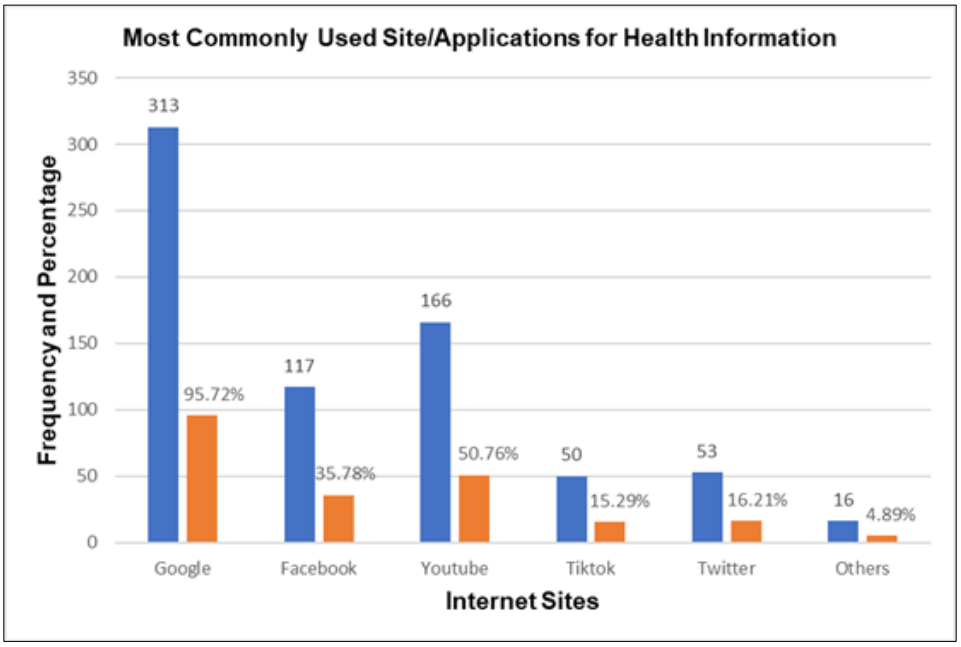

Figure 6 Distribution of Respondents by Most Commonly Used Site/Applications for Health Information

The findings of the study revealed that 68.8% of the respondents are female, while 31.2% are male. With reference to age, 94.5% of the respondents fall within the 18-22 age bracket, while 5.5% are 23 and above. In addition, 45.26% of the respondents are third-year students. Furthermore, the study revealed that most of the respondents are from the School of Science and Technology, with 39.14%. In addition, the majority of the respondents live in urban areas (65.4%) than Rural (34.6%). The same finding reveals that Google (95.72%) is the most commonly used internet site the respondents use for health information.

3.2 The Extent of Internet Usage on Self-Medication Awareness of the Respondents

Table 1 Extent of the Internet Usage

Question	Never	Rarely	Sometimes	Often	Always	Weighted mean	Interpretation
I browse the internet for health information during the pandemic.	1	9	52	118	147	4.23	Always
I browse the internet for aid to self-medication	8	26	87	115	91	3.78	Often
I browse the internet for aid to self-medication without consulting a doctor	41	53	108	76	49	3.12	Sometimes
I consider the information on the internet carries no risk for self-medication	62	91	114	38	22	2.59	Rarely
I believe that the information on the internet will be able to manage my medical condition	39	67	149	56	16	2.83	Sometimes
I take or use drugs/home remedies for self-medication that I've read on one of the websites.	92	75	79	62	19	2.51	Rarely
I go directly to a community pharmacy to buy the medication I found on the internet.	130	67	76	33	21	2.23	Rarely
I use the medicines stored at home to self-medicate.	25	44	88	107	63	3.43	Often
I rely on home remedies that I've read on one of the websites.	49	81	103	69	25	2.82	Sometimes
I double-check the information about the uses of the drugs/home remedies that I've read on one of the websites	9	13	47	91	167	4.20	Always
General Weighted Mean	3.17					Sometimes	

Table 2 Frequency of drug use for self-medication in a year

Number of Times	Frequency	Percentage (%)
Once	41	12.54
2 – 4	157	48.01
5 – 7	51	15.60
8 – 10	17	5.20
More than 10	61	18.65
Total	327	100

General findings revealed that the internet sometimes (General weighted mean = 3.17) influences the respondents' self–medication practices. Most respondents searched the internet for health information and double-checked the information on medications and home remedies that they have read on one of the websites. Furthermore, participants often used the internet as an aid for self-medication and stored medicines at home. Sometimes the respondents practiced using the internet without a professional's guidance, believing that the internet can treat their illnesses, and utilizing the home remedies that they have searched for on websites. Lastly, the respondents rarely considered that the information from the internet has no risk for self-medication. They rarely use drugs and home remedies they searched for on the internet and go directly to a pharmacy to buy medicines found on the internet. Findings also showed that participants use drugs two to four times in the past year.

3.3 Level of Self-medication Awareness

Table 3 Category drugs used for Self-medication

	Frequency	**Percentage (%)**
Analgesic/Antipyretic (for migraine, body pain, and fever)	258	78.90
NSAIDs (for severe body pain inflammation)	38	11.62
Antibiotics (for wound and skin problems)	120	36.70
Antacid (for indigestion and heartburn)	40	12.23
Anti-diarrhea	64	19.57
Eyedrops	42	12.84
Antitussive/ Expectorant (for cough)	66	20.18
Oral Contraceptive Pills	11	3.36
Antihistamine (for allergy)	69	21.10
Nasal decongestant (for colds)	78	23.85
Others	9	2.75

Table 4 Reasons for Self-Medication

	Frequency	**Percentage (%)**
Shortage of money	80	24.46
Wants a quick health fix	165	50.46
Shortage of time	125	38.23
Do not like visiting and getting checked up	98	29.97
Mildness of illness	196	59.94
An already known disease	144	44.04

Table 5 Home Remedies

Home Remedies	Frequency	Percentage (%)
Drinking green tea	136	41.59
Drinking ginger tea	165	50.46
Eating garlic	39	11.93
Use of turmeric	83	25.38
Drinking honey	159	48.62
Water therapy	12	3.67
Drinking fruit juices	5	1.53
Others	12	3.67

Table 6 Perceived effects of Self-medication

	Yes	No	Frequency	Percentage
I check the mode of administration (the way how the medications should be taken i.e swallowing the tablet whole) of the medication before using them.	308	19	308	94.19
I take medication/s thinking that it will help me get better.	311	16	311	95.11
I take medication/s without knowing its appropriate amount.	28	299	28	8.56
I take several different medications at the same time.	40	287	40	12.23
I have experienced adverse drug reactions (rashes, itching, headache, diarrhea, constipation, etc.) after taking medications.	47	280	47	14.37
I feel like my condition worsens after taking medications.	15	312	15	4.59
I immediately take medications whenever I feel like I'm about to get sick.	155	172	155	47.40
I was hospitalized after taking medication that a physician did not prescribe.	8	319	8	2.45
I have developed a new health problem for taking a particular medication for a long time.	12	315	12	3.67
After taking the medication I have experienced different kinds of side effects which lead to a new health problem.	13	314	13	3.98

The observed self-medication awareness of the respondents/non-medical students include: antipyretics or analgesics drugs are commonly used (78.90%), drinking ginger tea for home remedy (50.46%), due to mildness of illness (59.94%), and the mindset of it will help them get better if they self-medicate (95.11%).

3.4 Difference in Self-medication Awareness based on the Respondent's Profile

Table 7 Difference in Self-medication Awareness based on the Respondent's Sex and Age

Statement	Sex	Age
I browse the internet for health information during the pandemic.	Not Significant	Not Significant
I browse the internet for aid to self-medication.	Not Significant	Not Significant
I browse the internet for aid to self-medication without consulting a doctor.	Not Significant	Not Significant
I consider the information on the internet carries no risk for self-medication.	Significant	Not Significant

I believe that the information on the internet will be able to manage my medical condition.	Not Significant	Not Significant
I take or use drugs/home remedies for self-medication that I've read on one of the websites	Not Significant	Not Significant
I go directly to a community pharmacy to buy the medication I found on the internet.	Not Significant	Not Significant
I use the medicines stored at home to self-medicate.	Not Significant	Not Significant
I rely on home remedies that I've read on one of the websites.	Not Significant	Not Significant
I double-check the information about the uses of the drugs/home remedies that I've read on one of the websites.	Not Significant	Not Significant

Table 8 Difference in Self-medication Awareness based on the Respondent's Year Level, Degree Program, and Place of Residence

Statement	**Year Level**	**Degree Program**	**Place of Residence**
I browse the internet for health information during the pandemic.	Not Significant	Not Significant	Not Significant
I browse the internet for aid to self-medication	Not Significant	Not Significant	Not Significant
I browse the internet for aid to self-medication without consulting a doctor	Not Significant	Not Significant	Not Significant
I consider the information on the internet carries no risk for self-medication	Not Significant	Not Significant	Not Significant
I believe that the information on the internet will be able to manage my medical condition	Significant	Significant	Not Significant
I take or use drugs/home remedies for self-medication that I've read on one of the websites.	Not Significant	Not Significant	Not Significant
I go directly to a community pharmacy to buy the medication I found on the internet.	Not Significant	Not Significant	Not Significant
I use the medicines stored at home to self-medicate.	Not Significant	Not Significant	Not Significant
I rely on home remedies that I've read on one of the websites.	Not Significant	Not Significant	Not Significant
I double-check the information about the uses of the drugs/home remedies that I've read on one of the websites	Significant	Not Significant	Not Significant

The difference between self-medication and the sociodemographic profile of the respondents was determined to have no significant difference. With the exceptions of questions 4, 5, and 10 in relation to sex, year level, and degree program, most of the statements exceeded the P-value of 0.05, which is remarked as not significant.

3.5 Relationship between the Extent of Internet Usage and Level of Respondent's Self-medication Awareness

Current analysis suggests that internet usage has no significant relationship with the level of self-medication of the respondents.

Table 9 Relationship between the Extent of Internet Usage and Level of Respondent's Self-medication Awareness

Statement	Relationship
I browse the internet for health information during the pandemic.	Not Significant
I browse the internet for aid to self-medication	Not Significant
I browse the internet for aid to self-medication without consulting a doctor	Not Significant
I consider the information on the internet carries no risk for self-medication	Not Significant
I believe that the information on the internet will be able to manage my medical condition	Not Significant
I take or use drugs/home remedies for self-medication that I've read on one of the websites.	Not Significant
I go directly to a community pharmacy to buy the medication I found on the internet.	Not Significant
I use the medicines stored at home to self-medicate.	Not Significant
I rely on home remedies that I've read on one of the websites.	Not Significant
I double-check the information about the uses of the drugs/home remedies that I've read on one of the websites	Not Significant

4. Discussion

One out of the ten questions regarding the extent of internet use considered that sex has a significant difference in self-medication. In particular, practicing self-medication was more prevalent in men than in women [6]. Ironically, Esan et al. [7] discovered that women commonly utilized OTC drugs more than men. It is believed that the indication of a drug influences the prevalence of self-medication users between men and women [3,8]. Social media and the promotion of the internet influence the female population in self-medication [8].

The current study however, found that sex has no difference in self-medication awareness among non-medical students. Similar to the findings of Tesfaye et al. [3], Nasir et al. [9] reported a similar proportion of men and women practicing self-medication during the COVID-19 outbreak in Dhaka city. In Poland, it was found that gender did not have a role in self-medication awareness. Regardless of whether prior to or during the pandemic, inconsistency in the literature can be observed in knowing the significance of sex when it comes to self-medication practice [10].

There is also a lack of significance in determining the difference between age and self-medication awareness. According to Tesfaye et. al. [3], age and sex did not show significant association with self-medication in both univariate and multivariate analyses. Same to the current study, age did not show a significant difference in self-medication awareness according to age among non-medical students of Centro Escolar University-Manila.

With regards to year level, only two out of the ten questions show a significant association between the year level and self-medication awareness among students of Centro Escolar University-Manila. Mekuria et al. [11] revealed that the highest percentage of the students who utilize self-medication practice is from the third-year level. On the contrary, Gelayee [12] revealed that there is no significant association between the years of the study and self-medication practice. Because of the access to the internet and social media access, students' awareness about drugs and diseases increased and can be the reason for no significant association between the years of study and self-medication practice.

The study also revealed a significant difference between self-medication awareness and the degree programs of Centro Escolar University's non-medical students. Tesfaye [3] found out that non-medical students practice self-medication

more than medical students. In contrast to this finding, a Nigerian study of university students discovered that medical students had a higher incidence of self-medication. In addition, several other studies showed no significant difference between non-medical and medical students. Furthermore, Behzadifar [13] revealed that self-medication is much more common in medical students than in non-medical students.

Regarding the participants' place of residence, the study revealed no significant difference in self-medication awareness in rural or urban areas. Limaye et al. [14] reported no significant findings of self-medication practices in relation to sociodemographic characteristics for both urban and rural residents. However, it is stated that residents from the urban areas seem to self-medicate more than in rural areas for various reasons such as economics, access to pharmacies, and availability of healthcare practitioners which differs from the present study.

Lastly, the extent of internet usage and the level of respondent's self-medication awareness have no significant relationship. Agarwal et al. [2] stated that self-medication is considered a universal phenomenon and is not determined by one's education, cultural, and social background. Their study also revealed that self-medication practices are more common among medical or pharmacy students. To summarize, the extent of internet usage by non-medical students is not associated with their level of self-medication awareness.

5. Conclusion

- Respondents were eighteen to twenty-two years old, third-year undergraduate females from the School of Science and Technology who live in urban regions and frequently used Google for health information. The respondents answered that they only self-medicate two to four times a year using analgesic medications to manage their mild illness as they think they would get better. The researchers also found that the internet sometimes impacts the respondents' self-medication.
- There is a significant difference in self-medication based on the profile of the respondents.
- There is no significant relationship between the extent of internet usage and the level of self-medication awareness among the respondents.

Compliance with ethical standards

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Disclosure of conflict of interest

The authors certify that they are not connected to any organization or entity that has a financial or non-financial stake in the topics or resources covered in this article

Statement of ethical approval

The study followed the requirements given by the ethics committee and was reviewed and approved by the Centro Escolar Institutional Ethics Review Board on March 14, 2022, with a protocol code of CEU_IERB_2022-0360_SOP. In conducting this study, the respondent's participation in answering the questionnaire was voluntary. The respondent has the right to withdraw and decline to participate in the study without penalty or loss of benefits. The obtained data

from the respondents were deleted after the study was completed to protect the confidentiality and privacy of the personal information of the participants. The authors obtained the informed consent of all the participants in the study.

Statement of informed consent

The study used a questionnaire to obtain information from the participants. Informed consent was obtained from all individual participants included in the study prior to obtaining needed information.

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