

Health-Related Infodemic Perception among Nursing and Non-Nursing Students: A Comparative Study

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Abstract:

Background: Increasing digitalization allows for faster information dissemination and infodemic. An efficient public health response can be hampered by infodemics, which also cause misunderstanding and mistrust among people. Hence, the current study aimed to compare nursing and non-nursing students regarding health-related infodemic perception. **Subjects & Methods: Design:** Comparative cross-sectional descriptive research design was used where 820 students were randomly enrolled from the faculty of nursing and faculty of arts. **Tools:** (1) Socio-demographic characteristics; (2) Questionnaire to assess students' knowledge, attitude, and the role of social media in spreading health-related infodemic; and (3) Arabic version of Electronic Health Literacy Scale. **Results:** Only 26% of students were familiar with the concept of health-related infodemic. Social media platforms like Facebook (79.5%) and YouTube (46.3%) played a significant role in the dissemination of false and misleading health information. Both nursing (59%) and non-nursing (57.6%) students were aware of the topic of health-related infodemic. Nursing students scored lower on e-health literacy (77.3%). Ultimately, a plethora of nursing (82.7%) and non-nursing (81.2%) students had negative attitudes regarding health-related infodemic. **Conclusion:** Both nursing and non-nursing students showed unfavorable attitudes toward the health information epidemic. Nursing students knew more about health-related infodemics, despite having lower e-health literacy scores than non-nursing students. As students become more knowledgeable and literate about health-related infodemic, they consequently develop a negative attitude toward it. **Recommendations:** Governments must build resilience to misinformation and engage and empower communities to take positive actions particularly during outbreaks to control infodemics and safeguard the public's health.

Keywords: Infodemic, Corona Virus (COVID-19), Perception, Nursing Students, and Egypt.

Introduction

An information epidemic, sometimes known as an infodemic, has been caused by increased access to social media and cell phones with Internet connections, which has increased both the amount of information that can be produced and the number of ways that it may be obtained. Misinformation has the power to quickly spread and be internalized, affecting

people's actions, people may feel overwhelmed, emotionally drained, unable to meet important demands, and can affect decision-making processes when immediate answers are expected. All of this worsens the situation, affecting more people and endangering the viability and reach of the global health system.^[1]

Public health is seriously impacted by the global epidemic of false information that is

quickly spreading through social media platforms and other channels. ^[2] In such circumstances, rumors and false information can undermine efforts to communicate risks and discourage individuals from taking precautions that could keep them safe. ^[3] In this context, **Pan American Health Organization and World Health Organization**, highlighted that a lot of rumors about COVID-19 for example was observed as reported by where more than 361,000,000 videos with the tags "COVID-19" and "COVID 19 categorization" were posted to YouTube in just 30 days. In addition to 550 million tweets that used the terms "coronavirus," "coronavirus," "covid19," "covid 19," or "pandemic", and more than 19,200 articles published on Google Scholar. ^[1]

The term "infodemic" describes a significant increase in the amount of information surrounding a particular topic that can spread exponentially in a short amount of time because of a single incident, such as the COVID-19 pandemic. Misinformation, gossip, and information manipulation with dubious motives all show up in this environment. In the digital age, this tendency is reinforced by social networks and spreads like a virus farther and quicker. ^[2]

Harmful impacts on one's health may also result from the generated false information. A weak mind accepts any quick fix, which results in subpar therapies, wasteful accumulation of pills and protective gear, disarray, and other negative psychosocial effects. Humans have a natural curiosity instinct, which gets stronger with socialization. The main causes of health-related disinformation include incomplete understanding, partial

or biased interpretation, hearsay, rumor-mongering, and poor communication. ^[4]

Social media platforms have the drawback of introducing new social and health hazards, especially in times of medical crisis. Although these new media have a great potential to spread evidence-based knowledge widely, the speed and lack of control over the contents of health information (even when it comes from the scientific community) can easily compromise the fundamental requirements for reliable evidence and raise the likelihood of bias in research findings. Through the promotion of health-related instructional materials and material designed to answer frequently asked questions, these tools also have a significant potential to combat health misinformation. The battle against misinformation is not exclusive to the health field. Misinformation is also rooted in the political and economic systems of societies. ^[5]

The essential skills needed to locate, understand, use, and evaluate electronic, web-based, and mobile resources in order to make informed decisions about health promotion and disease prevention and management are referred to as digital health (E-health) literacy. ^[6] ^[7] Most users of digital technology and websites with health information are university students ^[8] particularly nursing student. ^[9] Nurses and nursing students play a crucial role in introducing, implementing, and using technology in clinical practices, and possessing digital literacy upon completing nursing baccalaureate studies is crucial. ^[9]

Perception is thought to be a driver of health activities, it is especially important to nurses as they work to control health

outcomes by promoting healthy behaviors. ^[10] In this stream, **American Psychological Association (APA)** defined perception as the process or the result of becoming aware of objects, events, and relationships by means of the senses. Perception enables individuals to organize and interpret the received stimuli into meaningful knowledge and actions. ^[11]

In this regard, nursing professionals have access to a wide range of tools, guidelines, and strategies for ensuring that patients and communities obtain evidence-based, reliable, and up-to-date health information, despite the fact that treating people for the harms of the infodemic is challenging and unpredictable. Ultimately, both consumers and nurses must learn how to critically analyze information. ^[12] Therefore, the World Health Organization recommended six suggestions for managing infodemic in a crisis or pandemic. These recommendations include: basing interventions and messages on the most recent research; applying for knowledge transfer and making health information understandable; working with communities to better understand their information needs; analyzing the impact of information; and collaborating with social media platforms, information suppliers, and civil society; Using trustworthy information to guide these actions and adapting them based on the pertinent and most recent narratives; and furthering the improvement of infodemic management through all required measures, including multidisciplinary research partnership. ^[13]

Significance of the study:

The problems related information disorders (also known as misinformation, disinformation, and malinformation) are significant and expanding, not just for

emergency response but also for other societal acts needed to manage it. ^[14] During epidemics and pandemics, the transmission of false information and disinformation poses a serious threat to public health, creating panic and undermining public confidence. ^[15] A significant share of many teens' and tweens' lives are spent on social media. If their primary use of social media is to supplement their in-person and offline interactions, they may also use it to keep track of health-related milestones in addition to communicating. Recently, academics have begun to pay attention to the infodemic subject.

This issue is of particular importance for university students in Egypt as they represent a significant proportion of the Egyptian population, and their numbers are growing. ^[16] There is no undergraduate course in Egypt that tries to equip students with the requisite health information skills, particularly, the COVID-19 epidemic highlights the necessity for programs that concentrate on empowering students to look for and assess health information problems that may occur as a result of relying on false health information. ^[17] To the researchers' knowledge, few studies in Egypt have focused on digital health literacy and no study evaluated health-related infodemic among university students. Thus, the present study aimed to explore health-related infodemic perception among nursing and non-nursing students.

Aim of the study:

The study sought to explore health-related infodemic perception among nursing and non-nursing students.

This aim has been achieved through the following objectives:

1. Assess nursing and non-nursing students' knowledge about health-related infodemic.
2. Determine nursing and non-nursing students' attitude towards health-related infodemic.
3. Categorize nursing and non-nursing students' Electronic Health Literacy.
4. Specify correlates of health-related infodemic among nursing and non-nursing.

Subjects and Methods

Research Design:

A comparative cross-sectional descriptive study design was followed in the current study.

Study Setting:

The current study was conducted in the Faculty of Arts and Nursing, Zagazig University, which is an Egyptian governmental university.

Sample:

Overall, 820 undergraduate male and female nursing and non-nursing students were selected from first (400 students) and fourth (420 student) year in the above-named faculties. Where 410 students represented each faculty. Students were randomly selected (each student in the first and fourth year in the above-mentioned setting had an equal chance to be selected in the study).

Sample size calculation:

The sample size was calculated according to the formula of **Daniel** ^[18];

$$n * N / (n + N - 1)$$

$$z = qnorm(0.975)$$

$$\sigma = 0.729$$

$$moe = 0.05$$

$$n = (z * \sigma / moe)^2$$

$$pop_n = 161000$$

$$corrected_n = n * pop_n / (n + pop_n - 1)$$

$$\alpha = 1 - 0.95 = 0.050.$$

$$Z(1-\alpha/2) = Z(1-0.050/2) = Z0.975 = 1.959964.$$

The required sample size is:

$$n = (Z0.975 * \sigma / MOE)^2 =$$

$$(1.959964 * 0.729 / 0.05)^2 = 817.$$

Rounded up from: 816.603487.

Since the population size is finite:

N=161000, the corrected sample size is:

$$n * N / (n + N - 1) = 820.$$

Rounded up from: 812.487539.

Sampling technique:

A simple random sampling procedure was followed, where sequential values were assigned for days, faculties, grades, and classrooms. Then, grabbing paper out of a jar. The same procedure was repeated for each step till the required sample was completed.

Tools for data collection: Three tools were used for collecting data for the present study they were;

Tool I: Socio-demographic characteristics ^[19], was used to assess the socio-demographic characteristic, where the scale is recommended for use for scaling the socioeconomic level of families for health research. It was used to collect data about students' age, sex, residence, parents' educational level, parents' occupation, per-capita income, and family size. crowding index, housing sanitation, and media available. The scale is both reliable (Cronbach's coefficient $\alpha = 0.79$) and valid [8 out of the 10 items had high loading (40.5) for SES].

Scoring system: to determine the socio-economic class, a score of less than 40% was considered as a low social class, from 40% to less than 70% considered as a middle class, and a score of 70% or more considered as a high social class.

Tool II: Questionnaire sheet set up by the researchers guided by the world health

organization's [WHO] [1] [2] [20-22] reports about the infodemic. It is composed of three parts.

Part 1: Knowledge about health-related infodemic

This part included eight questions about the definition of health-related infodemic (open-ended question), its spread, and its effect on health (responses ranged from yes, to not sure, and no). Students' knowledge scored as "2" for the correct answer, "1" for not sure, and "zero" for the wrong one. The total knowledge score was divided into satisfactory if the score was $\geq 60\%$ and unsatisfactory if the score was less than 60%.

Part 2: Attitude towards health-related infodemic

The respondents' attitudes were gauged using eight questions on a three-point Likert scale, with a score of 2 denoting "very much," a score of 1 denoting "somewhat," and a score of zero denoting "never." Before analysis, the negative wording questions were coded in reverse. A higher score (≥ 60) denotes a more negative attitude toward health-related infodemia, whereas a lower score (< 60) denotes a positive attitude.

Part 3: Role of social media in spreading health related infodemic

This part included questions about the COVID-19-associated infodemic, the consequences of health-related infodemic, and the trending source of social media apps responsible for propagating health topics associated with the infodemic. And finally, it is the responsibility of whom to address health-related infodemic.

Tool III: Electronic Health Literacy Scale [Ar-eHEALS].

The Arabic version translated by Wångdahl et al. [23] based on the original

scale of Norman and Skinner. [24] The eHEALS is an 8-item test measuring consumers' knowledge, comfort, and perceived competency in locating, assessing, and using electronic health information to address health issues. With response options ranging from "strongly disagree" scored "1" to "strongly agree" scored "5", the scale includes 8 items on a 5-point Likert scale. Cronbach $\alpha=0.92$ was considered acceptable as it was within the acceptable range of 0.70 to 0.95.

According to their range, the Ar-eHEALS scores were divided into three categories: insufficient (8–20), problematic (2–26), and sufficient (27-40). The range was also divided into two categories: limited (8-26) and sufficient (27-40).

Preparatory phase: - A review of the past and present literature and theoretical knowledge of many parts of the study was conducted using the available books, articles or magazines, or the internet with the aim of becoming familiar with the research topic and developing the study tools.

Content validity:

The tools' face and content validity was carried out by three staff members in community health nursing, faculty of nursing, Zagazig University who reviewed the tools and confirmed their clarity, comprehensiveness, and relevance.

Content reliability:

Reliability of tools was assessed through estimating test-retest reliability and measuring their internal consistency which was assessed by calculating Cronbach alpha coefficients (0.808 for Knowledge, 0.640 for Attitude, & 0.92 for Electronic Health Literacy).

Pilot study:

In order to test the questions for ambiguity and evaluate the viability and effectiveness of the tools. The pilot research was conducted on 10% of the sample. It also assisted in estimating pilot research to complete the data-collecting tools. The main study sample excluded participants from the pilot research.

Fieldwork:

The fieldwork was completed over the course of two months, beginning at the end of March 2022 and ending at the end of May 2022. The researchers got began by obtaining official approval through the proper channels (an official letter containing the aim and a brief description of the study was issued from the faculty of nursing to vice dean of the faculty of arts and faculty of nursing to gain their approval). Next, the timetable was coordinated depending on the academic schedule of the chosen grads. The researchers then gave a brief introduction about themselves and outlined the study's goals for the students. Those who agreed to take part in the study were included. Each student received 20 to 25 minutes to fill out the tools for data collection.

Ethical Considerations:

The research ethics committee of faculty of nursing Zagazig University approved the conduction of research. Acceptance of the data collection tools by participants was regarded as permission and consent. They were informed that their comments and personal information would be kept private and utilized only for the intended research (the study adopted an anonymous questionnaire).

Administrative Design:

A formal letter outlining the purpose of the study and requesting cooperation in

meeting with students at the proper time for data collection was sent to the deans of selected faculties, and their approval was granted.

Statistical Design:

All data were gathered, tabulated, and statistically examined using SPSS 20. Absolute frequencies (number) and relative frequencies were used to express qualitative data (percentage). Using the Chi-square test, percentages of categorical variables were compared. The Spearman correlation coefficient was determined to evaluate the relationships between the different study variables; the (+) and (-) signs denote direct and inverse correlation, respectively.

Results

In the current research, 820 university students between the ages of 18 and 23 were included. Of these, 66.3% were females, 72.3% were from rural areas, and 70.2% rightfully belonged to the middle social class. In terms of students' familiarity with the concept of "infodemic", 213 students (26%) reported doing so, while 74% (407 students) were not.

When students were asked about sources that played a significant role in the dissemination of false and misleading health information, 52.2% reported media, while social media platforms like Facebook took the lion's share (79.5%), YouTube (46.3%), Twitter and Instagram (37.6% & 34.4%, respectively).

In the meantime, students' own health (31.6%) and the health of some people they know (40.1%) have both suffered because of inaccurate and misleading health information found online and off. However, 28.2% of students reported no negative consequences.

In terms of students' overall knowledge, e-literacy, and attitude of health-related infodemic, **Table 1** summarizes that more nursing students (59%) were aware than non-nursing (57.6%) students about the topic of health-related infodemic. Nursing students scored lower on e-health literacy (77.3%) than non-nursing students (84.4%), with a statistically significant difference ($p=0.031$). Finally, the highest percentage of both nursing and non-nursing students (82.7% & 81.2%) had negative attitudes regarding health-related infodemic.

According to **Table 2**, there is a statistically significant positive association between students' overall knowledge and both e-health literacy, and attitude scores and between their e health literacy and attitude scores as well ($p=0.01$). This implies that as students become more knowledgeable and literate about health-related infodemic, they consequently develop a negative attitude toward it.

Considering the correlation between total knowledge, e-health literacy, attitude, and students' characteristics, **Table 3** points to a statistically significant positive correlation between students' total knowledge and age and a statistically significant negative correlation with students' social class. As for students' e-health literacy, it correlates negatively with faculty type (being a nursing student) and sex (being female), and positively with students' age and place of residence (being from an urban region) with a statistically significant association. The same table also indicates a statistically significant

positive correlation between students' attitude and their sex and residence, where being female and belonging to an urban area indicates holding a negative attitude toward health-related infodemic.

Table 4 lists the consequences of the infodemic about COVID-19 as reported by studied students. According to the data in the table, 62.7% of respondents claimed that it made people less likely to get vaccines, 61.2% claimed that it encouraged conspiracy theories, which encouraged the spread of the virus, 58.3% claimed that people stored medications, which caused a shortage, and 57.2% claimed that it encouraged the use of dangerous prescription drugs.

Students' opinions on who should be held accountable for addressing the information epidemic are shown in **Figure 1**. The graph shows that governments are responsible for it first, then people, then multilateral organizations, and finally civil society (61.1%, 50.7%, 42.3%, and 37.7%, respectively).

Table 1: Nursing and Non-Nursing students' total knowledge, e health literacy, and attitude regarding health-related infodemic (n=820)

Variables	student				X ² test	p- value
	Nursing (n=410)		Non-nursing (n=410)			
	No.	%	No.	%		
Total knowledge						
Aware	242	59.0	236	57.6	Fisher	.723
Not aware	168	41.0	174	42.4		
Total e health literacy						
Inadequate knowledge	13	3.2	7	1.7	6.93	.031*
Problematic	80	19.5	57	13.9		
Sufficient knowledge	317	77.3	346	84.4		
Total attitude						
Positive attitude	71	17.3	77	18.8	Fisher	.650
Negative attitude	339	82.7	333	81.2		

(*) Statistically significant at $p < 0.05$

Table 2: Correlation matrix of knowledge, e health literacy, and attitude score

Scores	Total mean score		
	Knowledge	E health literacy	Attitude
Knowledge			
E health literacy	.235**		
Attitude	.244**	.195**	

R: Pearson's correlation coefficient

(**) statistically significant at $p < 0.01$

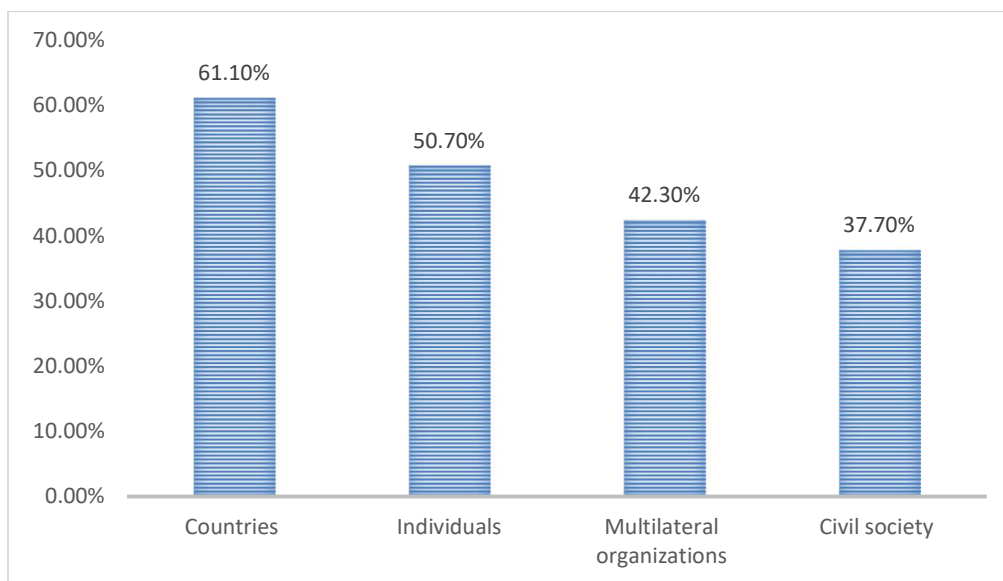
Table 3: Correlation matrix of knowledge, e-health literacy, attitude, and students' characteristics

Students' Characteristics	Spearman's rank correlation coefficient		
	Knowledge	E health literacy	Attitude
Faculty (Nursing)	-.015	-.090*	.019
Age	.085*	.127**	.126**
Sex (Females)	.037	-.130**	.135**
Residence (Urban)	-.031	.086*	.028
Social class	-.092**	.054	.063

(*) Statistically significant at $p < 0.05$ (**) statistically significant at $p < 0.01$ **Table 4: Consequences of infodemic COVID-19 as reported by studied students (n=820)**

Items	No.	%
Consequences @		
Promoted the idea of a conspiracy theory to explain the emergence of the epidemic and reduce the seriousness of the virus itself, which led to an increase in virus spread.	502	61.2
Promoted harmful prescriptions or medicines, believing that it is effective in preventing infection.	469	57.2
Storage of medicines has led to a shortage of medicine for patients who actually need it.	478	58.3
People's reluctance to benefit from diagnostic tests.	364	44.4
Encourage non-compliance with precautionary measures.	302	36.8
People's reluctance to take vaccinations.	514	62.7

@ responses are not mutually exclusive



Responses are not mutually exclusive

Figure 1: the responsibility of addressing the information epidemic as reported by studied students (n=820)

Discussion

In the months that followed COVID-19, the concept of "infodemic" blossomed in journalistic articles and scientific publications, creating a metaphor. It's been more than a year since the "infodemic" first made headlines. ^[25]

When students were asked about sources that played a significant role in the dissemination of false and misleading health information, social media platforms like Facebook took the lion's share (79.5%). This result ties well with previous studies wherein, **Hassan and Masoud** ^[26] in Egypt indicated that search engines and social media were commonly used by university students. As well, **Ghaddar et al.** ^[27] in Lebanon clarified that 63.8% were sometimes exposed, mainly to fake news shared through WhatsApp and Facebook.

As for students' awareness of the concept of infodemic, around one-quarter of them reported doing so. This might be

attributable to the novelty of the concept itself. Meanwhile, these students whose answers were correct might have the ability to expect and extract the meaning of infodemic. This goes in the same stream as **Simon and Camargo** ^[25] who elucidated that, in the months that followed COVID-19, journalistic articles and scholarly works that discussed or referenced the idea of an "infodemic" grew in popularity. Since the "infodemic" first made headlines, more than a year has passed.

In the meantime, students' own health (31.6%) and the health of some people they know (40.1%) have both suffered because of inaccurate and misleading health information found online and off. In this context, **Nesbitt et al.** ^[28] and **Naeem et al.** ^[29] stated that health information on social media platforms can cause harmful consequences such as high levels of anxiety or anger.

In terms of students' overall knowledge, e-health literacy, and attitude toward health-related infodemic, the concurrent study illustrated that more than half of both nursing and non-nursing students were knowledgeable (had sufficient knowledge). A possible rationale for this finding is the panic state that people experienced during Corona epidemic which sounded the alarm, causing them to appreciate the significance of health information and seek it out to maintain their health.

Nursing students scored lower on e-health literacy (77.3%) compared to non-nursing students (84.4%), with a statistically significant difference ($p=0.031$). This result could be attributable to the enormous amount of health-related knowledge nursing students acquire during their studies, so they are not in need to look for it online. This finding is incongruent with research conducted by **Sharma et al.** ^[30] among Nepalese undergraduate nursing students who found that students still estimate their degree of E-health literacy to be at a moderate level. On the other hand, the above-stated study finding is congruent with the results of Egyptian study ^[31] which clarified that the majority of baccalaureate nursing students have a moderate to a high level of digital health literacy.

Finally, a plethora of nursing (82.7%) and non-nursing (81.2%) students had negative attitudes regarding health-related infodemic. This finding might be attributed to the discrepancy between the information conveyed during COVID-19, where people were overwhelmed by a tremendous amount of misinformation which affected people's trust in any

information source and hence held a negative attitude toward the infodemic.

Students' e-health literacy correlates negatively with sex (being female), and positively with students' age and place of residence (being from an urban region) with a statistically significant association. This result ties well with a previous study ^[32] wherein, female students were 8.06% lower in eHealth literacy level as compared to males, and a year increase in student enrollment year increased their eHealth literacy level by 2.25% ($p < 0.01$). Students from urban residents were 4.24% higher in eHealth literacy skills as compared to those from rural-based residences. On the contrary, **Hassan and Masoud** ^[26] in Egypt found that Females had a higher frequency of online health information seeking and a higher level of health literacy.

An obvious illustration of how the information ecology and narratives may affect behaviors of public health is the infodemic that occurred during the COVID-19 epidemic. The decisions made by individuals, communities, and authorities for infection prevention and control may be influenced by how the public views an epidemic, which could have unfavorable consequences. ^[22] A similar pattern of results was obtained in the current study, where more than half of respondents claimed that the infodemic encouraged conspiracy theories, made people less likely to get vaccines, stored medications that caused a shortage, and stimulated the use of dangerous prescription drugs. In the same vein, **Naeem et al.** ^[29] pointed out that, half-backed conspiracy theories and pseudoscientific therapies concerning the prevention, diagnosis, treatment, origin

and spread of the COVID 19 virus. Additionally, **Ghaddar et al.** [27] in Lebanon reported that one third of participants were unsure about intent to get vaccinated.

From the present study results, students view that governments should be held accountable for addressing the information then people and multilateral organizations. Possible explanation of this result is the public's trust in government announcements regarding health issues. A perfect clarification was found by Egyptian study conducted by **Shehata** [17]. Who found that the university students reported that sources of information used to obtain COVID-19 information were mainly the Ministry of Health website and social media platforms, which indicates the importance of both sources.

This result goes in line with **Calleja et al.** [33] who clarified that infodemic response must consider the information ecosystem. Consequently, this dynamic environment requires interventions across multiple levels, such as individual, community, medium, platform, policy, and others. In the same way, the results of systematic review by **Alvarez-Galvez et al.** [5], exemplified that to prevent future infodemics, special attention will need to be paid both to increase the visibility of evidence-based knowledge generated by health organizations and academia. He also pointed out that, while combating both official and unofficial sources of misinformation, public health authorities should identify alternate ways to contact health information searchers, especially unlicensed and dubious social media accounts whose affiliation is unclear.

Conclusion

Based on study findings, it is inferred that a relatively small proportion of the students were familiar with the term "infodemic," and social media platforms like Facebook were crucial in disseminating inaccurate and misleading health information. Both nursing and non-nursing students showed unfavorable attitudes toward the health information epidemic. Nursing students knew more about health-related infodemics, despite having lower e-health literacy scores than non-nursing students. People's reluctance to receive vaccines was one of the infodemics' key effects during the COVID-19 pandemic, as reported by the students. Lastly, the students responded that the main responsibility for addressing the information epidemic lies with people and governments.

Recommendations

- Promoting tailored interventions that raise the awareness of university students about the health information epidemic and assisting in distinguishing personal opinions from evidence-based information.
- Online health communication campaigns are required to debunk false claims and raise the visibility of accurate health messages.
- Empowerment programs for communities about infodemic and its consequences.
- Governments must build resilience to misinformation and engage communities to take positive actions particularly during outbreaks to control infodemics and safeguard the public's health.
- Collaboration of the government, people, particularly reliable messengers, and multilateral organizations is crucial for controlling health information epidemics.
- Health-related infodemic might prove an important area for future research.

Limitations of study

To the researchers' knowledge, this is the first article in Egypt that manipulate the health-related infodemic topic. Hence, there are two limitations that could be addressed in future research; first, the study was conducted in only one university with a relatively small sample so generalization of the findings might be limited. Therefore, it was suggested that further studies could deploy a larger sample and more universities and faculties for more representative study. Second, the scarcity of research articles in such areas had an unfavorable effect on setting comparisons in the discussion of results part.

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