Original Article

Ethical faults in cyberspace on the team-based visual art in medical netiquette: A thematic analysis in a five-years experience

Nilofar Bahmei [1], Leili Mosalanejad [2*], Zahra Karimian [3], Navaz Emad [4]

[1] School of Medicine, Jahrom University of Medical Sciences, Jahrom, Iran.
[2] Department of Medical Education , Research Center for Social Determinant of Health, School of Medicine, Jahrom University of Medical Sciences. Jahrom, Iran.
[3] Department of e-Learning in Medical Sciences, Virtual School and Center of Excellence in e-Learning, Shiraz University of Medical Sciences, Shiraz, Iran.
[4] Deaprtment of Medical Education, School of Medicine, Tehran University of Medical Sciences, Tehran, Iran.

Article Info

Article history:
Received 8 Oct. 2022
Accepted 27 Jun. 2023
Published 15 Aug. 2023

***Corresponding author:**
Leili Mosalanejad. Professor of Medical Education Department, Research Center for Social Determinants of Health, Jahrom University of Medical sciences, Jahrom, Iran.
Email: Mosallanejad@jums.ac.ir

How to cite this article:
Bahmei N, Mosalanejad L, Karimian Z, Emad N. Ethical faults in cyberspace on the team-based visual art in medical netiquette: A thematic analysis in a five-Year experience. J Med Edu Dev. 2023; 16(51): 65-75.

Abstract

Background & Objective: While there are numerous advantages to using cyberspace for students' learning, it also increases the likelihood of unethical behavior. Therefore, this qualitative study aimed to identify and analyze ethical faults in cyberspace at Jahrom University of Medical Sciences.

Materials & Methods: This study was conducted at Jahrom University of Medical Sciences over a five-year period using a qualitative approach with thematic analysis. The population included 467 students, who were divided into ten groups and had taken a medical etiquette course. The students were asked to draw their desired factors in a visual art format as tree branches while working in teams to express ethical faults and issues in cyberspace. A total of 9 focus groups and 23 teamwork documents were analyzed, and groups with comprehensive analysis of the issue were selected by purposive sampling and focus groups interview to continue until data saturation was achieved. Braun & Clark's six-phase framework was used for thematic analysis in data analysis.

Results: The findings of this study identified three major themes or factors related to cyberspace, including reasons, faults, and preventive solutions that had creator-dependent 27 factors (Sub-themes) and 160 codes. These themes revealed the major ethical concepts in cyberspace from the student's viewpoint.

Conclusion: As technology develops rapidly, it is crucial to ensure integrity in education for all stakeholders related to an online learning community. Therefore, educational institutions need to focus on preventing cyber faults by educating and training users.

Keywords: Medical Students, Virtual, Art, Medical Education, Active Learning, Professionalism. E-Learning, Ethics, Cyberspace

Introduction

In recent times, there has been a surge in proposed educational methods and their application in medical sciences. With the nature of medical fields in mind, the requirement for new educational techniques and their implementation in the teaching-learning process seems more crucial than ever. Educational technology has three aspects. The first aspect puts an emphasis on new media; the second aspect is the process or method of designing software or educational materials; and the third aspect emphasizes the feature of solving problems. From these aspects, educational technology is a set of methods and strategies that analyze educational programs with a systemic view (2). Therefore, it can be stated that latest scientific findings in the fields of hardware and software, as well as the use of educational methods and strategies, for the skillful implementation of the teaching-learning process (3).

Research shows that the use of educational tools and technologies makes teaching more desirable and attractive, especially in teaching courses that are difficult for students. Due to diversity, attractiveness, and innovation, educational software provides a comprehensive method to promote learning and increase motivation (4, 5). The Internet is widely used in medicine, and every person who connects to the Internet has permission to access bibliographic, epidemiology,

Copyright © 2023 Zanjan University of Medical Sciences. Published by Zanjan University of Medical Sciences.
This work is licensed under a Creative Commons Attribution-NonCommercial 4.0 International license (https://creativecommons.org/licenses/by-nc/4.0/). Noncommercial uses of the work are permitted, provided the original work is properly cited.

[Downloaded from edujournal.zums.ac.ir on 2026-11-10]

[DOI: 10.32592/jmed.2023.16.51.65]

images, and other medical information from databases. In addition, the Internet has provided new methods for participation, discussion, and consultation, as well as electronic communication (6).

Several studies have investigated medical students' attitudes and perceptions regarding the ethics of using the Internet. A study conducted in Iran found that 82% of medical students believed that using the Internet for medical purposes is ethical, while 6% thought it is unethical. Nonetheless, 12% were uncertain about the ethics of using the Internet for medical purposes. The study also found that 77% of medical students believe that information on the Internet is reliable; however, 23% of cases were not sure about the reliability of the information. This study suggests that medical students in Iran have a positive attitude towards using the Internet for medical purposes; nonetheless, there is still some uncertainty regarding the reliability of the information available online (7).

Another study found that there is a lack of awareness among medical students regarding the ethical considerations associated with using the Internet for medical purposes. The study suggests that medical schools should provide more education and training on the ethics of using the Internet for medical purposes (8).

A study conducted in Turkey found that medical students have a positive attitude toward using the Internet for medical purposes. However, the study also found that medical students are concerned about the reliability and accuracy of the information available on the Internet. The study suggests that medical schools should provide more training on how to evaluate the reliability and accuracy of information available on the Internet (9).

As the use of the Internet in healthcare continues to grow, ethical challenges arise for medical students who rely heavily on online resources for learning and clinical practice. The Internet provides an abundance of information that can enhance medical education and improve patient care; however, it also presents ethical issues related to accuracy, privacy, and professionalism)10). One of the main ethical challenges faced by medical students when using the Internet is ensuring the accuracy of the information they obtain. With the vast amount of medical information available online, it can be difficult to determine the credibility of sources. Medical students must be able to distinguish reliable sources from those that may contain inaccurate or biased information. In addition, they must critically evaluate the quality of the evidence presented in online resources to ensure that they are making informed clinical decisions (11).

Another ethical issue is maintaining patient privacy when using the Internet for medical purposes. Medical students must be aware of the risks associated with accessing patient information online and must ensure that they comply with laws and regulations related to patient privacy and confidentiality. Failure to protect patient information can result in legal and ethical consequences for the medical student and their institution (12).

Numerous studies have examined the ethical challenges associated with the use of the Internet in medical education. To address these challenges, medical schools must educate students on how to critically evaluate online sources of information. This can include providing training on identifying reliable sources and evaluating the credibility of online information using such criteria as authorship, currency, and objectivity (13). Moreover, students must be educated on the importance of maintaining patient privacy, including the use of secure communication channels and appropriate handling of patient data (14,15).

A third ethical challenge associated with using the Internet in medical education is academic integrity. With the vast amount of information available online, medical students may be tempted to engage in academic misconduct, such as plagiarism or cheating on exams. To address this challenge, medical schools must have clear policies in place regarding academic integrity and provide training on the importance of academic honesty (16).

In conclusion, while the Internet provides many benefits to medical students, it also poses ethical challenges related to accuracy, privacy, and professionalism. Therefore, medical students must be trained in the appropriate use of online resources and adhere to ethical standards for protecting patient privacy and maintaining professional conduct. In light of the aforementioned issues, the present study aimed to conduct a critical analysis of ethical faults in cyberspace based on team-based visual art from medical students' experiences and exploration of this issue in a medical netiquette course using thematic analysis over five years of experience at Jahrom University of Medical Sciences.

Materials & Methods

The current research was conducted with a qualitative approach by content analysis method.

[Downloaded from edujournal.zums.ac.ir on 2026-11-10]

[DOI: 10.32592/jmed.2023.16.51.65]

Design and setting

This qualitative study was carried out by thematic content analysis of medical students' experiences. We performed a series of investigations about ethical faults in virtual space in a team-based activity from visual art; thereafter, a thematic analysis was conducted in order to generate an answer to our question. The intervention method can be examined in two periods before and during the COVID-19 pandemic. During in-person classes, ethical issues were taught in cyberspace in the form of teaching basic concepts and terms in the first 30-45 minutes of the class in the form of lecturing. Thereafter, each class was divided into groups of 6-8 participants. All groups discussed concepts and design expressions as virtual art in the branches of the tree. In the remaining time, the representative of each group presented the contents and displayed the group's drawing on the class whiteboard. In addition, each class continued with a focus group and discussed all presentations. All parts were recorded and used for analysis. The work and presentation of the groups were related to the ethical faults in cyberspace and the factors affecting them. The last stage was the teacher's summary and presentation of important content. Following that, the complete content was uploaded in the university's Learning Management System (LMS) for further study.

In virtual classes and during the COVID-19 pandemic period, the educational content was prepared before the start of the multimedia file course on the theory of ethics in cyberspace. The content was flipped in the learning management system (LMS) in the form of two video files in MP4 format with a duration of about 30-45 minutes and was made available to the students. The students selected their teams, and while doing the homework, they uploaded them to the LMS. The main analysis in the COVID-19 pandemic was from written assignments by visual art teamwork and online discussion in virtual classes. Purposive sampling from the completed task and group discussions was performed. In total, 9 focus groups and 23 teamwork documents entered the study. Overall, data gathering was from team activity virtual and face-to-face classes focus groups from all groups.

Participants and sampling

The statistical population includes about 467 second-year medical students at Jahrom University of Medical Sciences who studied basic sciences and took the medical netiquette course from 2017-2022. The medical netiquette course includes special topics for promoting medical ethics in practice, which discusses various areas, such as ethics, professionalism, individual development, and basic medical skills. These courses are examined in four separate semesters. One of the main topics of this course is ethics in cyberspace. A total number of 460 students at different entrances participated in the research. Among the many groups in the class, which had 67 groups in the total entrance groups, purposive sampling was chosen, and 23 groups were selected by fully answering the question and examining all aspects of the subject. Purposive sampling was used to select 23 students who worked in groups and participated in the study. Group discussions as an interview in groups were considered, and nine groups entered the study. Data selection continued until data saturation. The characteristics of the groups are displayed in Table 1.

Table 1. Characteristics of groups in different entrance

Years	Group 1 (Semester 1): Gender		Group 2 (Semester 2): Gender		Total		
	Female	Male	Female	Male	Female	Male	All
2017	No intervention		28	17	28	17	45
2018	26	22	23	19	49	41	90
2019	25	21	26	22	51	43	94
2020	26	21	27	21	53	42	95
2021	25	23	24	22	49	45	94
2022	27	22	No intervention		27	22	49
*****	129	109	128	101	257	210	**467**

Tools/Instruments

The data collection method was based on thematic content analysis of students' experiences in focus groups, documents, and written assignments.

Data collection method

Sampling was performed online. The questionnaire was designed in an online format. The questionnaire link was provided to the students along with the explanation letter about the research objectives and satisfaction in the messaging groups. After completion, the questionnaires were checked in terms of answering rate, and incomplete questionnaires were removed. All questionnaires were distributed and collected by a member of the research team.

It is worth mentioning that from 2020-2022, considering that in-person classes were closed due to the COVID-19

[Downloaded from edujournal.zums.ac.ir on 2026-11-10]

[DOI: 10.32592/jmed.2023.16.51.65]

pandemic, group discussion sessions were conducted online using the Adobe Connect software. Both in-person and online, the professor supervised the groups as a facilitator and helped speed up the work process by asking questions. In addition to classroom activities, students had the opportunity to prepare a summary of the teamwork and send it to the professor through the LMS. In fact, this study is qualitative research through longitudinal thematic analysis in five different years in multiple groups with the aim of finding the depth of different views of students about faults in cyberspace.

All documents drawn by students were considered to enter the study. Moreover, all group discussions in class were regarded as a focus group to collect the data. The documents that had fully examined and drawn all aspects of the subject were included in the study. Examples of students' drawings of courses (Figure 1), Faults (Figure 2), as well as prevention and solutions (Figure 3), are demonstrated. In this regard, all documents collected in the class through interviews with focus groups and discussions were used in data analysis. Using data continued until data saturation. Purposive sampling from team work documents and focus groups' interview considered to entering to study and thematic analysis was down from data.

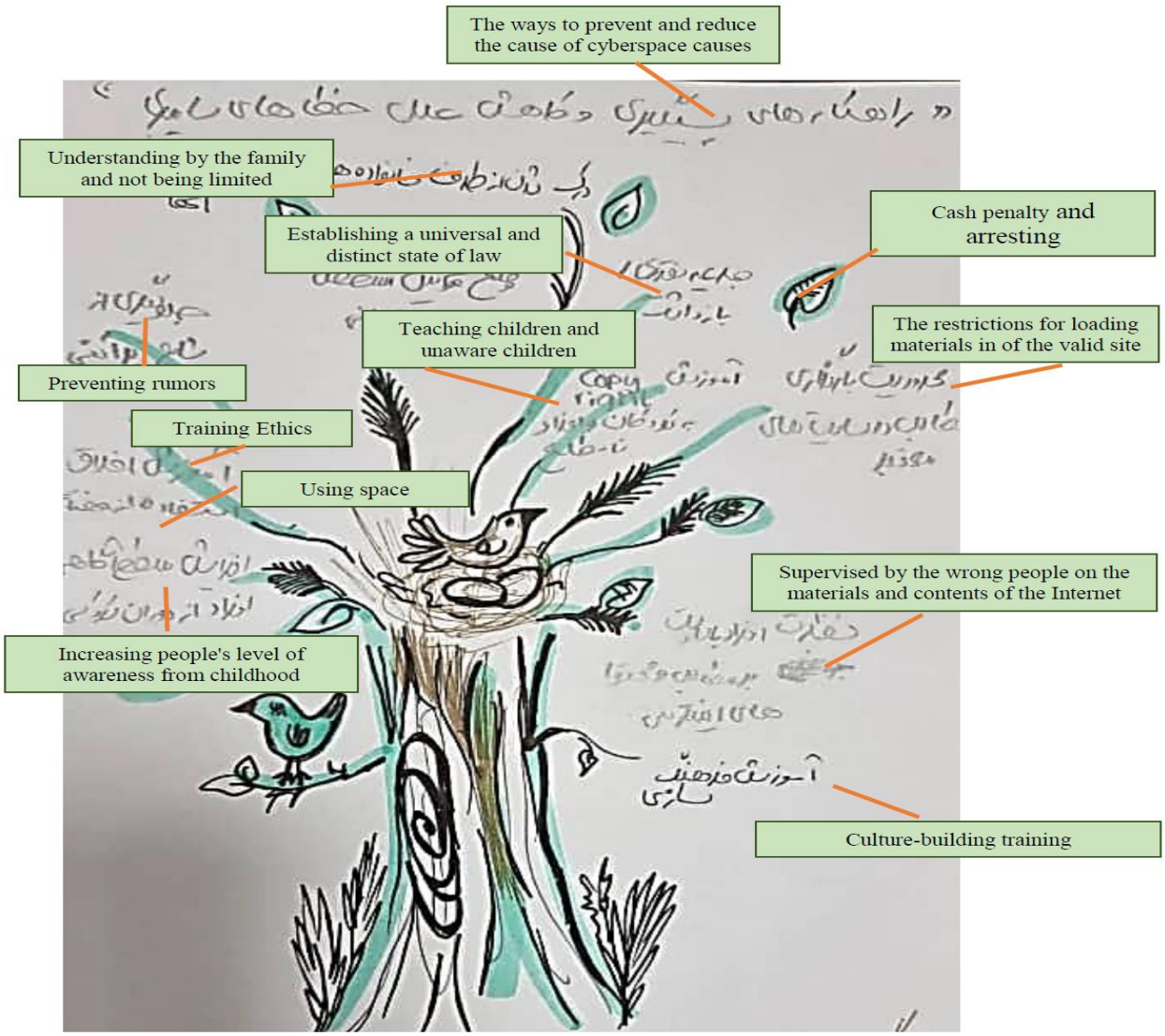


Figure 1. Reasons of cyberspace chalenges presented in the students' assignment

[Downloaded from edujournal.zums.ac.ir on 2026-11-10]

[DOI: 10.32592/jmed.2023.16.51.65]

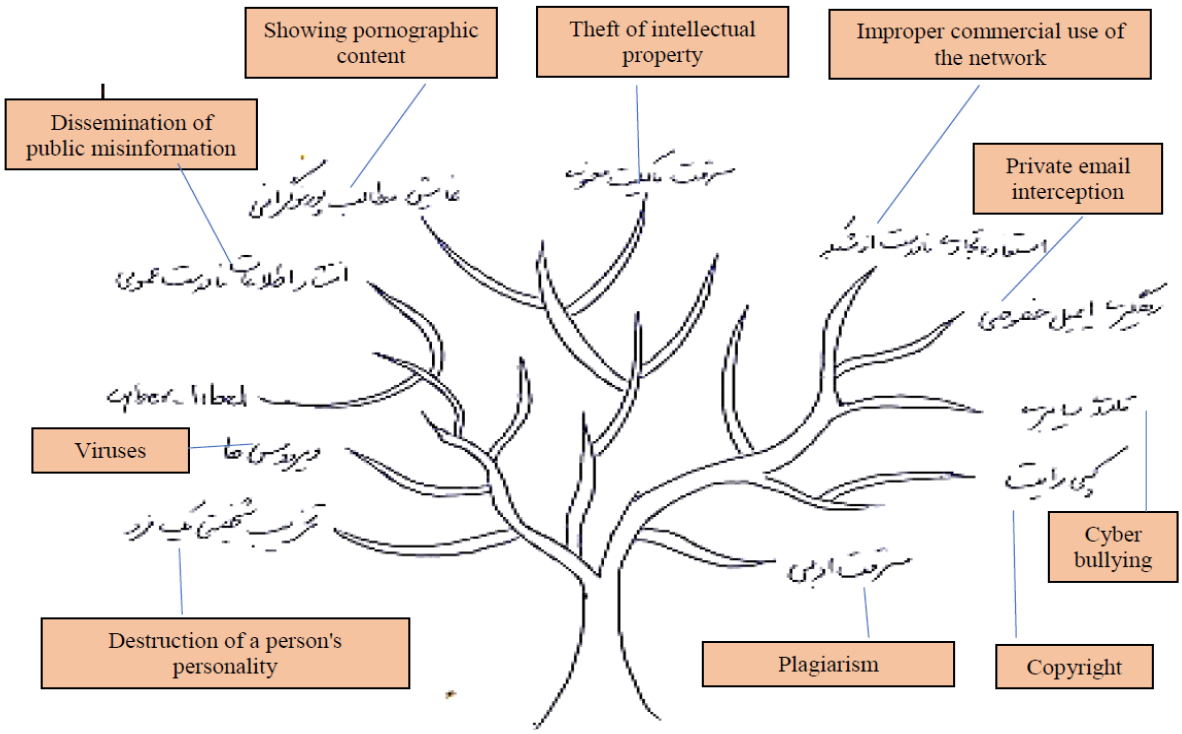


Figure 2. Faults in cyberspace presented in the students' assignment

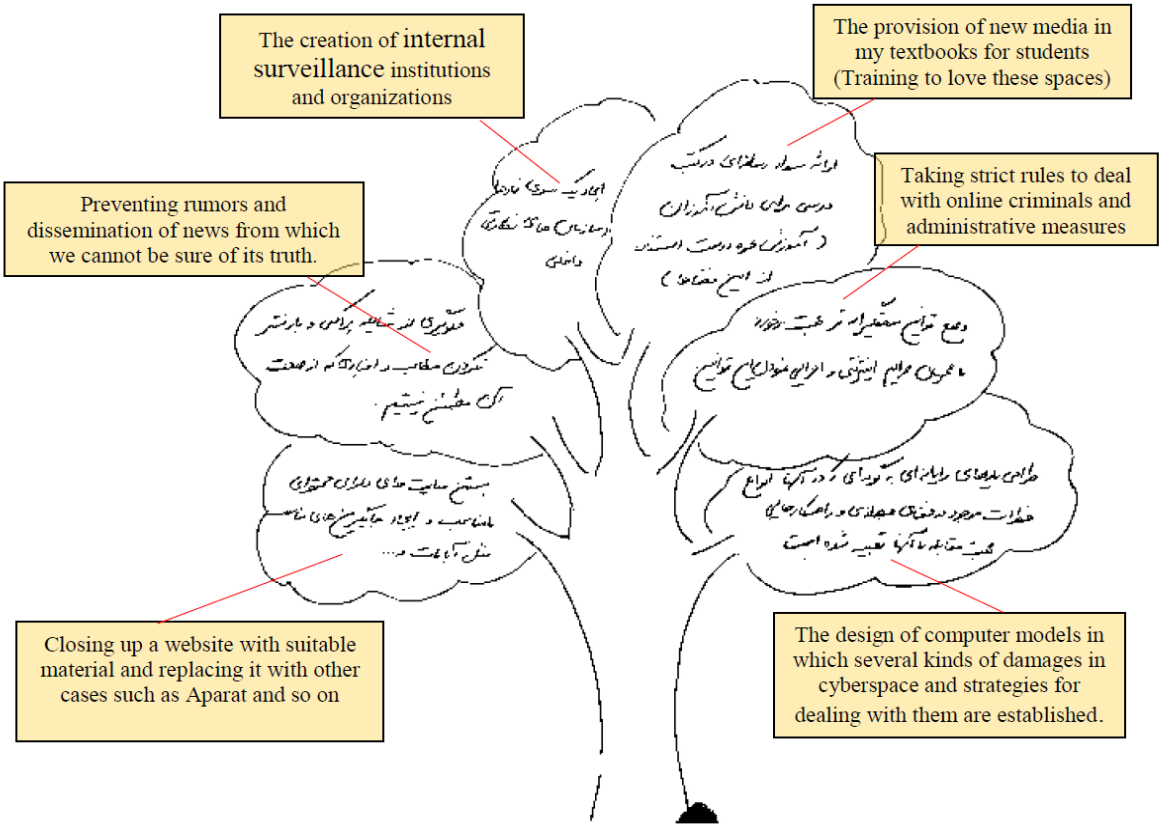


Figure 3. Prevention strategy and solutions in cyberspace presented in the students' assignment

[Downloaded from edujournal.zums.ac.ir on 2026-11-10]

[DOI: 10.32592/jmed.2023.16.51.65]

Data analysis

The thematic analysis process involves a continuous back-and-forth between data sets. This method of analysis can be used well to recognize patterns in qualitative data (Figure 4).

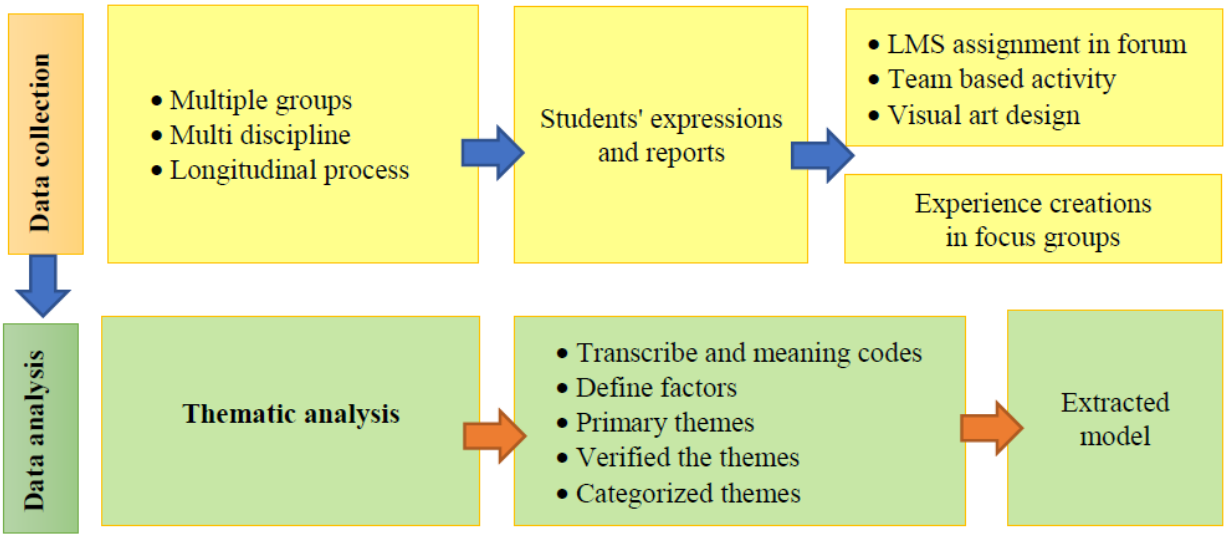


Figure 4. Process of thematic analysis performed in this study

We performed a thematic analysis according to Braun in the original language. The reason for using thematic analysis is that it can usefully summarize key features and has been proven useful for producing qualitative analysis (17). The theme analysis method was considered. There is a step-by-step guide to conducting thematic analysis in cyberspace faults:

Familiarize yourself with the data: Before you begin analyzing the data, it is important to become familiar with them. Read through the data several times to gain an understanding of the context and the different issues that arise.

Generate initial codes: Start by identifying the key themes and patterns that emerge from the data. This can be performed by highlighting or underlining relevant text or by creating a list of initial codes that capture the key ideas and concepts.

-Group codes into themes: Once you have generated a list of codes, group them into themes. A theme is a broad idea or concept that captures the essence of the data. Look for patterns and connections between the codes to identify the themes that emerge from the data.

Review and refine themes: Review and refine your themes, making sure they are coherent, relevant, and representative of the data. Check that each theme captures a distinct idea and that there is no overlap between themes.

Define and name themes: Define each theme by creating a concise statement that captures its meaning. Give each theme a name that reflects its content and meaning.

Create a thematic map: Once you have defined and named your themes, create a thematic map that illustrates the relationships between the themes. This can be done by organizing the themes into a hierarchical structure, with overarching themes at the top and sub-themes, including reasons, faults, and prevention and solutions.

Interpret the findings: Finally, interpret your findings by reflecting on what the themes reveal about cyberspace faults. Consider how the themes relate to one another and what they tell you about them.

Validity and reliability: The researcher and the participants had a long relationship. It helped to gain trustworthiness in the study. After forming the initial codes based on participants' opinions, the correctness of the codes and interpretations was ensured. It helped to are credibility, transferability, dependability, and confirmability. The method of control by two members and an external expert helped the credibility. It was also tried to use multi-group experiences in an attempt to increase the validity of the content.

[Downloaded from edujournal.zums.ac.ir on 2026-11-10]

[DOI: 10.32592/jmed.2023.16.51.65]

Results

A total of 467 medical students, comprising 10 groups who entered in September and January from 2017-2022, participated in this study. In terms of gender, 56.3% of cases were female. Based on the research findings, a total of 160 codes, 66 sub-themes, and 27 main themes were extracted from the analysis of student comments. **Appendix1** presents examples of the stages of code, theme, and sub-themes extraction.

Reviewing, defining, and extracting the themes

We extracted 27 factors that were divided into three themes. See Figure 4 for all themes and sub-themes (factors). The themes were named:

a. Faults: This part reviewed all malpractices in this space. There were six factors within these six sub-themes: Show strength, intimidation, plagiarism, and intellectual property, self-disclosure, unethical content, and earning illegal income

Focus groups 3: "*Everyone wants to take advantage of this space. For example, it advertises a good and high-quality item, but what is sent is a different and low-quality item. This is fraud.*"

Focus group 6: "*Sometimes, so much irrelevant content is posted in the groups that one gets sick of following the group.*"

Focus group 7: "*The unknown nature of users makes some hide behind this identity and harm others*."

Focus group 2: "*Well, the situation is such that anyone can copy whatever they like due to access to resources*."

b. Reasons: Reason for something that affects the malpractice in cyberspace. There were 12 factors in this theme: Low level of knowledge, ignorance, emotions, weak monitoring, inappropriate cultural context, livelihood and economic status, non-compliance with the law, uncontrolled access, individual characteristics, weakness of the family institution, weakness of free beds, novelty, and new experiences.

Focus group1: "*After all, it is an attractive environment. Anyone can easily do anything in this space. In addition, there are no strict rules. When someone has no knowledge, it is easy to make mistakes in this space*."

Focus group 5: "*Families play a major role. They should publish and explain these rules to their children at home. The role of the family is very important*."

Focus group 2: "*Some are not responsible. Wherever they are, they are the same, and this space is a situation for the error of some who do not obey the law*."

c. Prevention strategies and solutions: Thereafter, the third theme was the prevention strategies and solutions. This theme concludes all strategies that affect the decreasing of faults in this space. There were nine factors in this theme: software security, privacy, law, media literacy, management of social networks, individual, family, social support, and culture.

Focus group 9: "*There must be solid laws in the field of laws and their practices in every country, and all people must comply with them. Really, in our country, these laws are not comprehensive*."

Focus group 8: "*Every country in its own cultural context should establish measures to comply with ethics and law. This case can be very effective and play a preventive role".*

Focus group 4:"*It is possible to help reduce the damage by improving the security of the used systems. For example, it limited the access and photos of receiving it. Set limits for different ages*."

Discussion

The results of this study pointed out that the majority of ethical problems in cyberspace from the students' viewpoint can be analyzed in three categories: Prevention strategies and solutions (9 Sub-themes and 66 Codes), reasons (12 Sub-themes and 47 Codes), and faults (6 Sub-themes and 47 Codes). According to the extracted themes and results, cyber faults happen for different reasons. In the analysis of the origin of cyber faults in various studies, one of the main reasons for non-compliance with ethical principles in virtual learning is the lack of identification and supervision of users (18). According to recent results, self-disclosure without borders was one of the reasons for committing faults and immoral acts in cyberspace.

Studies on medical students' perceptions of plagiarism and related factors illustrated that plagiarism is a common cyber fault among medical students in developing countries. This study suggests creating awareness about the consequences of unethical behaviors in the academic field. Another study reported that the most common plagiaristic activity was citing a full-text source by reading the abstract (19, 20). In this study, one of the common cyber mistakes is not respecting copyright, the reasons for which can be individual and social. In addition, showing internet misuse, false information, and plagiarism were common reasons for faults in this space. Ample evidence reported the impact of bullying on the training and careers of medical scientists. They have investigated the effects of bullying on students and its harmful outcome on them (21,22).

Other concerns include reports of patients disclosing private patient information, bullying by medical

[Downloaded from edujournal.zums.ac.ir on 2026-11-10]

[DOI: 10.32592/jmed.2023.16.51.65]

students, or sharing online descriptions of patients in their care, invasion of patients' privacy, and conflicts of interest (23). In another study aimed at the social and ethical issues of online learning during the COVID-19 pandemic in India, the methodology of webcams and student freedom was linked to privacy concerns versus discipline. The most controversial issue Bhattacharya raises is whether students should be required to keep the webcam (24). This shows that students feel more freedom during online learning due to the conditions that exist in the online space. Nevertheless, the activities of the students must be verified.

Documents are provided for their reasons so that the students do not abuse the conditions of freedom of action in cyberspace and their privacy is not violated. The findings of other research indicated that the Internet has negative effects on students' ethical values and has caused them to be dishonest, less responsible, and lazy (25). This is very dangerous since it destroys the ethicality of the nation's generation. In this study, individual development, increasing awareness, and knowledge of ethical codes have been recognized as prevention factors after analyzing the themes of preventive solutions for cyber faults. In addition, it is necessary to train the students on optimal utilization of skills ethically.

Evidence suggested that students' awareness of intellectual property rights, vandalism, and privacy is low regarding their commitment to ethical issues in using the e-learning system. Therefore, students should be aware of ethical issues to avoid unethical behavior when using the e-learning system (26); accordingly, solutions should be identified to solve the problem. In order to eliminate the effect of the Internet on the deterioration of ethical values, preventive measures should be taken to avoid widespread moral degeneration. Preventive solutions identified in the analysis of themes include promoting culture and family support, individual development, relying on the law, and social support.

The results of ethical development in e-learning in Saudi Arabia demonstrated that the lack of physical presence of the professor, the lack of involvement of community members (family and friends, etc.), the lack of ethical support of the environment and the policies of the university institution, and the absence of explicit materials about ethics in the courses are the cause of the ethical decadence of students in the electronic environment (27). The stated study found that cyber faults can be prevented by addressing individual, social, family, and legal effects, and preventive measures play a significant role in reducing their occurrence. Other recent studies (28-30) have also reported the importance of prevention in the reduction of cyber faults. Education of users and increasing awareness of ethical, legal, and political processes is crucial in taking advantage of opportunities in cyberspace, as confirmed by previous research.

Conclusion

The use of e-learning for the ethical education of users may not always yield positive and productive results. This could be due to various factors, such as lack of attendance, limited communication and face-to-face interaction between the professor and student, students' failure to model ethical behavior from the professor, high student density in each class, the existence of false identities, and individuals' lack of commitment and adherence to completing assignments and exams. All these can cause weak communication and interactions, resulting in the emergence of value bottlenecks and a reduction in the ethical education of students, with some students even assigning responsibility to others. On the other hand, the rapid development of technology poses a challenge to ensuring integrity in education for all stakeholders related to an online learning community. The pace of technological advancements may even go beyond the control of those who created them. This makes it necessary to develop ethical codes and provide infrastructure for their implementation and also to rely on laws. Therefore, one of the primary responsibilities of educational institutions is to promote a culture that supports individual development, reliance on the law, social support, and family values to prevent cyber faults.

Ethical considerations

The students were provided with clear instructions about the topic and how to proceed from the beginning. All the materials were used without mentioning the names of individuals or groups, and the students voluntarily entered their data in the university's LMS. This project was registered with the university's ethics committee under the code IR.jums.REC.1400.113.

Acknowledgment

The authors would like to express their gratitude to all the students and student groups who participated in this study for the past five years.

Conflicts of interest

The authors declare that they have no conflicts of interest regarding this study.

[Downloaded from edujournal.zums.ac.ir on 2026-11-10]

[DOI: 10.32592/jmed.2023.16.51.65]

Funding
There was no financial support provided for the design of the study, data collection, analysis, interpretation of results, and writing of the article.

Data availability
As per the approval of the Ethics Committee, all the legal and professional responsibilities for project implementation are attributed to the editor and colleagues. All the data related to the conclusions are presented in the manuscript.

Authors' contributions
NB and LM served as the principal investigators who designed the study. LM searched the literature, while ZK and NE supported the development of the study. LM and ZK collected the data and did content and thematic analysis. A.GH. drafted the manuscript, and LM, NE, and ZK supervised the writing of the manuscript. All authors provided comments and revisions to the manuscript and read and approved the final version critically.

References

1. Mosalanejad L. Construction of a new professional identity in medical education: A trend to the future in Iran due to a basic reform in education and expectations. Strides in Development of Medical Education. 2020; 17(1): 1-2. [https://doi.org/10.22062/sdme.2020.91483]
2. Herold B. Technology in education: An overview. Education Week. 2016; 20(7): 129-41.
3. Han H, Resch DS, Kovach RA. Educational technology in medical education. Teaching and Learning in Medicine. 2013; 25(sup1): S39-43. [https://doi.org/10.1080/10401334.2013.842914]
4. Istance D, Kools M. OECD work on technology and education: Innovative learning environments as an integrating framework. European Journal of Education. 2013 Mar; 48(1): 43-57. [https://doi.org/ 10.1111/ejed.12017]
5. Sandars J, Patel RS, Goh PS, Kokatailo PK, Lafferty N. The importance of educational theories for facilitating learning when using technology in medical education. Medical Teacher. 2015; 37(11): 1039-42. [https://doi.org/10.3109/0142159X.2015.1019438]
6. Tejedo-Romero F, Araujo JF, Tejada Á, Ramírez Y. E-government mechanisms to enhance the participation of citizens and society: Exploratory analysis through the dimension of municipalities. Technology in Society. 2022; 1; 70: 101978. [https://doi.org/10.1016/j.techsoc.2022.101978]
7. Zauderer CR, Ganzer CA. Cinematic technology: The role of visual learning. Nurse Educator. 2011; 36(2): 76-9. [https://doi.org/10.1097/NNE.0b013e31820b4fbf]
8. Scalese RJ, Obeso VT, Issenberg SB. Simulation technology for skills training and competency assessment in medical education. Journal of General Internal Medicine. 2008; 23: 46-9. [https://doi.org/10.1007/s11606-007-0283-4]
9. Masic I. E-learning as new method of medical education. Acta Informatica Medica. 2008; 16(2): 102-17. [https://doi.org/10.5455/aim.2008.16.102-117].
10. Agrafiotis, Ioannis and Bada, Maria and Cornish, Paul and Creese, Sadie and Goldsmith, Michael and Ignatuschtschenko, Eva and Roberts, Taylor and Upton, David M., Cyber Harm: Concepts, Taxonomy and Measurement (August 1, 2016). Saïd Business School WP 2016-23, Available at SSRN: [https://ssrn.com/abstract=2828646] [http://dx.doi.org/10.2139/ssrn.2828646]
11. Saemi H, Fathi Vajargah K, Attaran M, AA FA. Compiling the curriculum planning pattern based on social network to train and improve the university teachers. Education Strategies in Medical Sciences. 2014; 7(3): 191-8.
12. Masrom M, Lim EA, Din S. Security and quality issues in trusting e-government service delivery. Managing Trust in Cyberspace. 2013; 197.[https://doi.org/10.1201/b16318-10].
13. Amini M, Parizad M, Rivaz S, Sagheb MM, Rivaz M. The Comparison of Medical Students Attitudes and Performance Regarding Different Types of Academic Cheating During Clinical Courses. Strides in Development of Medical Education. 2016; 12(5): 709-17.
14. Ravani Pour M, Vanaki Z, Afsar L, Azemian A. The standards of professionalism in nursing: the nursing instructors' experiences. Evidence Based Care. 2014;4(1):27-40. [In Persian] [https://doi.org/10.22038/ EBCJ.2014.2392].
15. Amini M, Parizad M, Rivaz S, Sagheb MM, Rivaz M. The Comparison of Medical Students Attitudes and Performance Regarding Different Types of Academic Cheating During Clinical Courses. Strides in Development of Medical Education. 2016; 12(5): 709-17. [https://www.sid.ir/en/Journal/ViewPaper.aspx?ID=502550]
16. Ravani Pour M, Vanaki Z, Afsar L, Azemian A. The standards of professionalism in nursing: the nursing instructors' experiences. Evidence Based Care. 2014;4(1):27-40. [In Persian]. [https://doi.org/10.22038/EBCJ.2014.2392]
17. Braun V, Clarke V. Using thematic analysis in psychology. Qualitative Research in Psychology. 2006; 3(2): 77–101. [https://doi.org/10.1191/1478088706qp063oa]
18. Miyato T, Maeda SI, Koyama M, Ishii S. Virtual adversarial training: a regularization method for supervised and semi-supervised learning. IEEE Transactions on Pattern Analysis and Machine Intelligence. 2018;41(8):1979-93. [https://doi.org/ 10.1109/TPAMI.2018.2858821]
19. Javaeed A, Khan AS, Khan SH, Ghauri SK. Perceptions of plagiarism among undergraduate medical students in Rawalpindi. Pakistan Journal of Medical Sciences. 2019 Mar-Apr;35(2):532-536. [https://doi: 10.12669/pjms.35.2.33]
20. Ewing H, Mathieson K, Anast A, Roehling T. Student and faculty perceptions of plagiarism in health sciences education. Journal of Further and Higher Education. 2019 ;43(1):79-88. [https://doi.org/10.1080/0309877X.2017.1356913]
21. Moy B. The Impact of Bullying on the Training and Careers of Medical Doctors and Medical Scientists (Doctoral dissertation, Northeastern University).2022.
22. Mazhari S. The prevalence of problematic internet use and the related factors in medical students, Kerman, Iran. Addiction & Health. 2012;4(3-4):87.
23. Raj A. Professionalism in the use of social media by physicians and medical students: Concerns, Benefits and Ethical Dilemmas. Global Bioethic Enquiry. 2017.47,777-780.
24. Sekartaji PR, Susetya MB, Dwiyanti AR, Pandin MG. The Effects of Online Learning on Students' Ethics and Moral Values. 2022.

[Downloaded from edujournal.zums.ac.ir on 2026-11-10]

[DOI: 10.32592/jmed.2023.16.51.65]

25. Hakimi L, Eynon R, Murphy VA. The ethics of using digital trace data in education: A thematic review of the research landscape. Review of Educational Research. 2021; 91(5): 671-717.[https://doi.org/10.3102/00346543211020116]
26. Mosalanejad L, Dehghani A, Abdolahifard K. The students' experiences of ethics in online systems: A phenomenological study. Turkish Online Journal of Distance Education. 2014; 15(4): 205-16. [https://doi.org/10.17718/tojde.02251]
27. Bhattacharya S, Murthy V, Bhattacharya S. The social and ethical issues of online learning during the pandemic and beyond. Asian Journal of Business Ethics. 2022; 20: 1-9. [https://doi.org/10.1007/s13520-022-00148-z]
28. Sumardi, L, Rispawati. The Use of Internet in Learning and Its Impacts on Students' Moral Values: A Case Study in Mataram University, Indonesia. Journal of Critical Reviews. 2020;7(14): 790-794. [http://dx.doi.org/10.31838/jcr.07.14.142]
29. Muhammad A, Ghalib MF, Ahmad F, Naveed QN, Shah A. A study to investigate state of ethical development in e-learning. International Journal of Advanced Computer Science and Applications. 2016; 7(4): 284-90. [https://doi.org/10.14569/IJACSA.2016.070436]
30. Obar JA, Wildman SS. SSRN Journal. Social media definition and the governance challenge: an introduction to the special issue. Social media definition and the governance challenge: An introduction to the special issue. Telecommunications Policy. 2015; 39(9):745-5. [https://doi.org/10.2139/ssrn.2647377]

Appendix 1. Themes, Sub-themes, and Codes extracted from the thematic analysis

Themes	**Sub-Themes and (66 Codes)**		
1-1. Prevention strategy and solutions (9 Sub-Themes)	**Software security (4):** installing strong antivirus, use of strong user-passwords, strong password	**Management of social networks (3):** clarity of the goals and mission of the group, multi-axial control of group processes in space, and measuring the suitability of each content in each space	**Social support (5):** appropriate education at the community level, development of suitable alternative spaces, creating healthy attractions, family cooperation in education and culture, using peer support
	Family (5): accompanying parents, filling the emotional void in the family, family monitoring, parent training, parent study	**Law (11):** development of strict rules, legal-disciplinary treatment of cyberspace crimes, creating appropriate filtering in age groups, suitable filtering of free content, determining heavy penalties, fast and decisive handling of cybercrimes, development of laws and cyber police, monitoring the rules, creating restrictions for offenders, limitations and group leveling, compliance with the laws and rights of cyberspace in affairs	**Privacy (7):** protecting your privacy and that of others, reducing communication with unknown people, removing suspicious groups and spaces, failing to follow uncertain situations, preventing inappropriate requests, leaving suspicious environments, assignment of occupational and personal communication lines, ignoring malicious messages, taking care of user privacy, and protecting occupational privacy, especially in medicine
	Media literacy (13): promotion of media literacy, referral to specialists, the use of multi-published publications in advertising and education, development of professional behavior in the environment, denial of virtual knowledge, learning to work with content and resources, not publishing false news and republishing it, reflection and thinking in fast transfer and copying of contents, verifying the content and transferring it, not publishing superficial and weak content, mention of ownership of resources in the use of resources, checking the accuracy of information before publishing, non-publishing without mentioning copyright	**Individual (9):** lack of emotional stimulation of people, non-transference and personal judgment in the environment, removing the conflict of interest, non-publishing the questionable content, management and control over writing style, not publishing private topics in cyberspace, avoiding aimless browsing, not including personal information in any space, replacing useful activities instead of virtual space	**Culture (9):** public culture-building, developing a culture of secrecy, developing cultural institutions, institutionalizing cyber culture, mass media advertising, the act of promoting intellectual and customary values, the use of multi-published publications in advertising and education, modeling with successful people, training and culture building with role models
Themes	**Sub-Themes and (47 Codes)**		
1-2. Reasons (12 Sub-Themes)	**Low level of knowledge (3):** lack of proper training by parents, lack of proper training by the responsible institutions, the absence of false self-esteem control programs	**Ignorance (3):** failure to understand the consequences of the environment, failure to understand the environment and how to use it, lack of knowledge of technolog	**Inappropriate culture context (3):** not having an authentic culture, the influence of foreign culture on values, cultural poverty
	Emotions (2): The emotional atmosphere of youth and teenagers, Sensation seeking, Weak monitoring, lack of monitoring of children, Lack of parental attention and monitoring, Lack of monitoring of the specialized group by the admin, Weak management, and lack of a classification of information for age groups	**Non-compliance with the law (5):** Failure to obey the law, Environmental law-breaking, Inadequacy of penal laws, Lawless environment, Lack of inhibition, and Ignoring the law	**Individual characteristics (8):** lack of responsibility, desire to be seen, lack of control of behavior and speech, mental deviations, loneliness and isolation, fame-seeking, diversification, and suppressed emotions
	Livelihood and economic status (3): Lack of suitable employment, National and economic poverty, and lack of enough jobs in the community	**Uncontrolled access (6):** easy and convenient access, the existence of various and different information, freedom of publication, easy and convenient access by mobile, unlimited access, unknown of people	**Weak monitoring (5):** lack of monitoring of children, lack of parental attention and monitoring, lack of monitoring of the specialized group by the admin, weak management, and lack of classification of information for age groups
	Weakness of free beds (3): Lack of freedom of speech at the community level, Lack of space for free thinking, Facing religious doubts	**Weakness of the family institution (3):** Improper upbringing, Indifference of parents, Lack of parental monitoring	**novelty and new experiences (3):** the newness of the environment, weakness in the real world, existence of attractive entertainment
Themes	**Sub-Themes and (47 Codes)**		

[Downloaded from edujournal.zums.ac.ir on 2026-11-10]
[DOI: 10.32592/jmed.2023.16.51.65]

1-3. Faults (6 Sub-Themes)	**Show strength (5):** hacking, space control, interception of other people's information, false progressivism, curiosity about other people's information	**Intimidation (4):** material abuse, selling information credit, coercion, bullying	**Earning illegal income (8):** Dirty words, Insulting personal and group values, Disrespect and obscenity, Using vulgar words, Social anxiety, Arousal, Stimulation of emotions, Disturbing public opinion
	Plagiarism and intellectual property (13): non-compliance with copyright, plagiarism, improper use of research materials, unethical traits, hiding the truth, providing false information, roorback, unfair judgment, spreading rumors, unjust slander, republishing unhelpful content, violating the rights of others, time neglect	**Self-disclosure (9):** Friendship without borders, Meeting with everyone, Providing your personal information, Another revelation, Publishing photos and videos of others, Disclosure of information to others, Harm to others, Destruction of thoughts and people, Providing the personal information of others	**Unethical content (8):** promoting promiscuity, publication of false content, age inappropriate content, destruction of the personality of people, publishing pornography, infected income generation, inappropriate advertising, and commercial use of contents

[Downloaded from edujournal.zums.ac.ir on 2026-11-10]

[DOI: 10.32592/jmed.2023.16.51.65]