



REVIEW ARTICLE

Professionalism in the virtual environment: A comprehensive review of evidences in medical education

Background: A review on medical articles and their multiplicity, as well as the studies on professionalism in the general and specially online mode in recent years shows the attention of medical training practitioners to this subject and their effort to overcome its possible threats. The aim of the present study was examining all the available evidences about e professionalism with an emphasis on medical education.

Methods: This study investigated the comprehensive review of evidences in their concepts. It was conducted in term of reviewing all texts related to e professionalism through all search engines between 2000 and 2018 in an online environment. Qualitative studies with the key words of e professionalism were searched from RISMA 2009 Flow Diagram. The evidences were extracted by mixing the results of different parts and their analyzing.

Results: 237 articles were checked in the survey. After checking the quality and the adaption of titles with their concepts, 23 articles were chosen and proved for this study. Examining the evidences categorized the articles in the following fields: "Definition, concept and the importance of virtual professionalism, tools of testing professionalism in the virtual environment, people's perception and outlook of professionalism in virtual environment, inappropriate behaviors in using electronic environment and virtual networks, politics of explaining virtual professionalism, and the role of virtual environment in explaining medical professionalism".

Conclusions: Due to the importance of professionalism in the virtual environment in definitions also a look at the importance of technology usage in education and therapy, paying attention to different dimensions of professionalism is necessary more than ever.

Keywords: Professionalism, Electronic Learning, virtual environment, Social Media, Medical Education, Ethic

الاحتراف الافتراضي في العلوم الطبية: مراجعة شاملة للأدلة في التعليم الطبي

الخلفية: استعراض للمقالات الطبية وتعددتها ودراسات الاحتراف في الوضع العام والخاص عبر الإنترنت يظهر اهتمام ممارسي التدريب الطبي في السنوات الأخيرة بهذا الموضوع وجهودهم للتغلب على هذه التحديات. كان الهدف من هذه الدراسة هو فحص جميع الأدلة المتاحة حول الاحتراف الإلكتروني مع التركيز على العلوم الطبية

الطريقة: استنفدت هذه الدراسة نطاق مراجعة الأدلة مع المفاهيم. كان أداءها من حيث مراجعة جميع النصوص المتعلقة باحتراف البريد الإلكتروني من خلال استخدام جميع محركات البحث بين عامي 2000 و 2018 في بيئة الإنترنت. تم البحث عن الأبحاث ذات الصلة التي كان لها أسلوب عمل مناسب من حيث جودة العمل وتصميمها بناءً على مخطط تدفق RISMA 2009. تم استخلاص الأدلة عن طريق خلط نتائج الأجزاء المختلفة وتحليلها.

النتائج: 237 مقالة تم فحصها في الاستطلاع. بعد التحقق من جودة وتكييف العناوين والمفهوم؛ تم اختيار 23 مقالاً وإثبات أنها مثالية أخيراً. أدى فحص الأدلة إلى تصنيف المقالات في هذه المجالات: "تعريف ومفهوم وأهمية الاحتراف الافتراضي، أدوات اختبار الاحتراف في البيئة الافتراضية، تصور الناس وتوقعاتهم للاحتراف في البيئة الافتراضية، السلوك غير المناسب في استخدام البيئة الإلكترونية والشبكات الافتراضية، سياسة شرح الاحتراف الافتراضي و أخيراً؛ دور البيئة الافتراضية في شرح الاحتراف الطبي".

الاستنتاجات: نظراً لأهمية الاحتراف في البيئة الافتراضية في التعريفات، فإن إلقاء نظرة على أهمية استخدام التكنولوجيا في التعليم والعلاج، أصبح الاهتمام بأبعاد الاحتراف المختلفة أمراً ضرورياً أكثر من أي وقت مضى.

الكلمات المفتاحية: الاحتراف، التعلم الإلكتروني، البيئة الافتراضية، وسائل التواصل الاجتماعي (الشبكات الافتراضية)، التعليم الطبي، الأخلاق.

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حرفه ای گری مجازی در علوم پزشکی: مرور جامع شواهد در زمینه آموزش پزشکی

زمینه و هدف: مروری بر مقالات پزشکی و تعدد مقالات و مطالعات انجام شده پیرامون حرفه ای گری بصورت عام و در محیط های آنلاین بطور اخص، نشانگر توجه دست اندرکاران آموزش پزشکی در سالهای اخیر به این مقوله و تلاش برای غلبه بر این تهدیدها می باشد. این مطالعه با هدف انجام مرور جامع شواهد در زمینه حرفه ای گری مجازی با تأکید بر آموزش علوم پزشکی انجام گردیده است.

روش: این مطالعه به صورت مرور کلیه متون در زمینه حرفه ای گری با استفاده از کلیه موتورهای جستجوگر، در بین سالهای 2000 تا 2018 در زمینه حرفه ای گری مجازی انجام گردید. تحقیقات مرتبط که از لحاظ کیفیت کار از روش کار مناسبی برخوردار بودند بر اساس نمودار پریزما جستجو و طراحی گردید. با قرار دادن نتایج تحلیل بخش های مختلف شواهد استخراج گردید.

یافته ها: در بررسی نتایج جستجو 237 مقاله مورد بررسی قرار گرفت و پس از بررسی کیفیت و تطبیق عنوان و محتوا، نهایتاً 23 مقاله مناسب تشخیص داده شد. بررسی شواهد، مقالات را در حیطه های زیر طبقه بندی کرده است: تعریف، مفهوم و اهمیت حرفه ای گری مجازی، ابزارهای سنجش حرفه ای گری در محیط مجازی، درک و نگرش افراد به حرفه ای گری در محیط مجازی، رفتارهای نامناسب در استفاده از فضای الکترونیک و شبکه های مجازی، سیاست ها در تبیین حرفه ای گری محیط مجازی و نقش محیط مجازی در تبیین حرفه ای گری پزشکی طبقه بندی گردید.

نتیجه گیری: با توجه به اهمیت حرفه ای گری در محیط مجازی (آگاهی مناسب از محیط، تنظیم و سازماندهی بکارگیری آن، ارزیابی و تحلیل موقعیت و پاسخگویی جهت استفاده و حضور در فضای الکترونیک) در تعاریف، همچنین نظر به اهمیت استفاده از تکنولوژی در آموزش و درمان، لزوم توجه به ابعاد مختلف حرفه ای گری در حرفه پزشکی بیش از پیش احساس میشود. لازم است تا ضمن ایجاد آگاهی از اهمیت و قابلیت های این فضا، زمینه رشد حرفه ای گری در بکارگیری آن نیز فراهم گردد.

واژه های کلیدی: حرفه ای گری، آموزش الکترونیک، محیط مجازی، شبکه های مجازی، علوم پزشکی

روچرل لول پرمیڈیکل سائنس میں پیشہ ورانہ کام، میڈیکل تعلیم کے تعلق سے جامع

شواہد کی جمع آوری۔

بیک گراؤنڈ: میڈیکل تحقیقاتی مقالوں اور ان کی بڑی تعداد اور پیشہ ورانہ کارکردگی عام طور سے اور آتلان کارکردگی خاص طور سے پر جو تحقیقات انجام دی گئی ہیں ان سے معلوم ہوتا ہے کہ ایران میں میڈیکل تعلیم کے ذمہ داروں نے اس راستے میں موجود چیلنجز کو مد نظر رکھا ہے۔ اس تحقیق میں میڈیکل علوم کی تعلیم کے تعلق سے سائبر اسپیس میں پیشہ واریت کی مثالوں کا جائزہ لیا گیا ہے۔

روش: اس تحقیق میں e پیشہ واریت کے بارے میں تمام متون کو تمام سرچ انجنوں کے ذریعے سرچ کیا گیا۔ یہ سرچ دوبار سے دوبار اٹھارہ تک لکھے گئے متون میں انجام دی گئی۔ وہ تحقیقات جو کام کی شرح بغش تھیں انہیں پریزما نیبل کے ذریعے سرچ کیا گیا۔ تجزیہ کے نتائج کا تجزیہ کر کے پیشہ واریت کے بارے میں مواد حاصل کیا گیا۔

نتیجے: مقالوں کی چھان بین میں دو سو سببیتس مقالے منتخب گئے اور دوبارہ ان کا جائزہ لیا گیا جس سے اڑسٹھ مقالے باقی آئے۔ پیشہ واریت پر تحقیق کی نتیجے میں ان مقالوں کو ان ذیلی عناوین پر تقسیم کیا گیا ہے۔ تعریف، پیشہ واریت کا مفہوم اور اہمیت، پیشہ واریت کو کن چیزوں سے پرکھا جاسکتا ہے، سائبر اسپیس اور لوگوں کے نزدیک پیشہ واریت کا مفہوم، انٹرنیٹ اور سوشل میڈیا کا نامناسب استعمال، سائبر اسپیس میں پیشہ واریت کی وضاحت کے لئے پالیسیوں کا اعلان نیز میڈیکل شعبوں میں پیشہ ورانہ صلاحیتوں کی وضاحت کرنے میں سائبر اسپیس کا کردار۔

منفاہش: اس تحقیق سے معلوم ہوتا ہے کہ سائبر اسپیس میں پیشہ واریت ایک اہم موضوع ہے اسی کے تحت میڈیکل شعبوں میں بھی اسے رواج دیا جا نا چاہیے جس کی ضرورت محسوس ہو رہی ہے۔ سائبر اسپیس میں مواقع کی فراہمی کے پیش نظر میڈیکل فیڈل میں بھی اسے اپنانے کی کوشش کی جائے۔

کلیدی الفاظ: پیشہ واریت، الکترونیک تعلیم، سائبر اسپیس، سوشل میڈیا، میڈیکل سائنس۔

INTRODUCTION

Based on the standard technology committee's definition, the electronic education system is a kind of learning tech that uses the web browsers as a tool to interact with learners and these systems are used to ease learning and teaching (1,2).

The definition of Professionalism actually is hard to describe, measure objectively, or even to teach. Although there are different discussions in this field, most of the commenters believe that professionalism means "to preserve general trust in medical profession." (3).

Professionalism in virtual environments is more than having just general topics in mind like an appropriate E-mail text or the rules of online communication. Professionalism includes an online personality and online information in every format that represents the professional identity and shows outlooks and behaviors (4,5).

In 2002, the American college of medicine along with the internal American committee of medicine and the Europe's medical federation, have codified the charter of medical professionalism in 3 basic rules including the priority of patient's good and patient's values, the advancement of general equality and respecting patient's independence, and avoiding suppression of patient's authority (6,7).

Growth of Information and Communication Technology in different fields including medical sciences, students, teachers, and professors faced with challenges in the field of Professionalism. These challenges included many different dimensions like unprofessional publication of online topics in professional health weblogs and public networks or amoral publication of patient's information knowing the importance of the patient's privacy (8,9).

However, what is important in the public mind is the role of medical ethics in the traditional environment that is confirmed for every kind of communication, including online communication, personal internet usage, and public networks in clinical environment (10).

Unfortunately the evidences show that professionalism is fading, and due to focusing on tech usage in different sciences nowadays including medical science with the title of electronic health and electronic patient, medical students are facing value threatening issues specially in online environments (11,12).

A review on medical articles, multiplicity and studies done in the field of professionalism in general and the lack of articles specially in online environments have shown the attention of the medical education agents to this field and their effort to overcome these threats in recent years. Also a change in culture, educational environment, and the medical education's curriculum is necessary to move toward the improvement of professionalism in online environment (5). Due to the importance of professionalism in virtual environment and a look to the special growth of health technologies in medical sciences, the necessity of professionalism is clear to people; so this research will check out the related indicators by examining all available evidences about e professionalism with an emphasis on medical sciences. Also it should be noted that one of the integral parts of professional ethic in medical sciences is

attention to professionalism in virtual environment. E professionalism, thus, is an integral and unavoidable part of medical ethic. The virtual environment has taken main aspects of medicine in education, research and all the health team communication. So in the new age, the medical ethic may face a new challenge.

METHODS

In this paper we studied all the evidences related to professionalism in the virtual environment as a scoping review. Scoping reviews are exploratory projects that systematically map the literature on a topic, identifying key concepts, theories and sources of evidence (Grant & Booth, 2009)

In this review study, all the evidences related to professionalism in the virtual environment searched in major search engines, such as MEDLINE, the Educational Resources Information Center (ERIC), Health and Psychosocial Instruments (HAPI), Psych INFO, Cochrane library, PubMed, CINAHL and Google Scholar from 2000 to 2018.

All of the 2553 articles contributing to the keywords were searched. Articles that were done on special groups or weren't related to online professionalism were deleted and finally 37 articles were used to be checked in their evidences. These articles were searched in forms of qualitative, descriptive, interventional, and review study.

This review focused solely on academic qualitative studies from January 2000 to 2018 on professionalism. A preliminary search found no evidence in 1990. The authors devised their inclusive parameters as follows: studies published in any country, peer-reviewed research, and English-language publications.

As review of scope and evidences, the study was carried out as quantitative articles, qualitative, mixed methods articles; review articles; meta-syntheses; literature reviews, meta-analysis, commentary, letter to editor, and all paper about e professionalism.

The search strategy was developed in conjunction with a librarian and included keywords that would be transferable across a number of databases in (MeSH). The search strategy was developed by all authors. Some of these keywords included some reforms to use for a wider range of results. Original academic research articles were sourced using the keywords "e professionalism* OR professionalism in virtual environment or social network * e professionalism AND virtual learning * e professionalism AND higher school * AND medical sciences * e professionalism AND definition or concept * , * e professionalism AND concept* e professionalism AND clinical Environment * *e professionalism AND student behavior and mal behavior * ,* e professionalism and teacher or medical teacher * , * e professionalism AND educational politics* , * e professionalism AND medical or paramedical students or nursing students * , *e professionalism AND political policy in education * , * e professionalism AND professionalism in medical sciences * the search terms were shown in CINAHL(36), Cochrane(24), google scholar(2230), Eric (198), PubMed (37), and Web of Science (28). Each category consisted of a mixture of medical subject headings

(Mesh). Full text articles were retrieved for further investigation when a title and abstract appeared to meet inclusion criteria.

All 2553 articles searched for key words. The titles and abstracts were reviewed by the researchers. Following this, 754 articles were rejected for failing to meet the inclusion criteria. The remaining articles were extracted for full-text review. Duplicate articles excluded and 37 articles were chosen for study. The authors reviewed the reference lists of articles. A total combination of 37 studies underwent quality appraisal. (Figure 1)

RESULTS

Ultimate checking of the subjective area was led to the appearance of these fields including:

Meanings, tools, concept of e professionalism

Professional and unprofessional behaviors

Effects of virtual environment on professionalism

Politics of professionalism's expansion in virtual environment

Many evidences emphasized on e professionalism concept, its definition and dimensions. (Table1)

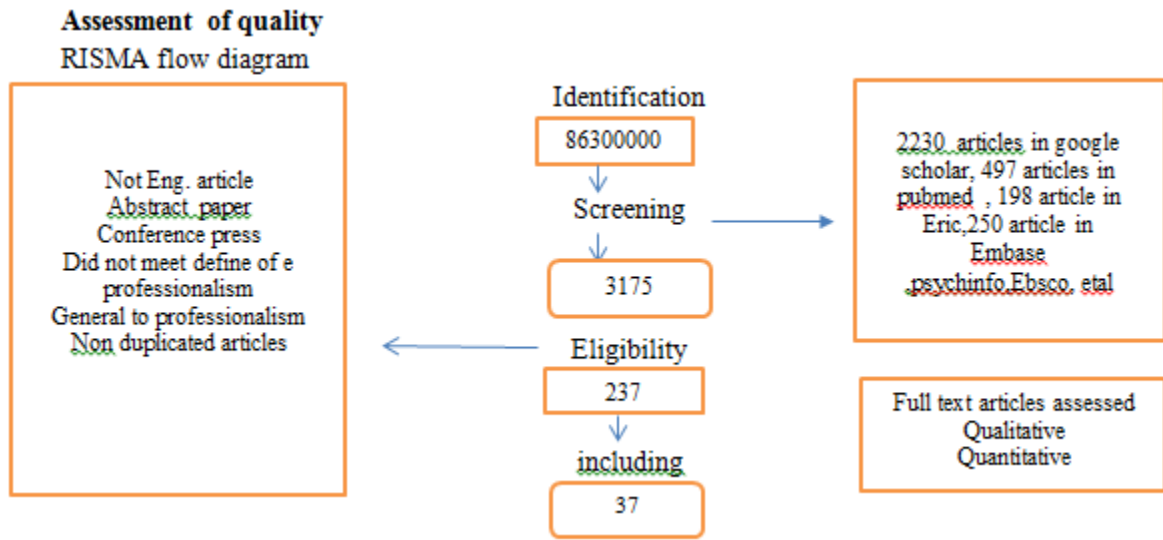


Figure 1. Prisma flow diagram

Table 1. Studies related to professionalism definition and concept (1,4,12-20)				
Results	Article type	Researchers	year	
Digital professionalism can be unified in medical education by using strategies based on knowledge, coordination, testing, and responsiveness. These rules of digital professionalism opens the way for medical students and doctors to understand the positive aspects of using digital medias, along with thinking about lessening its negative aspects.	commentary	Ellaway, et al.	2015	
Professionalism includes action, education, reflective and applied ethics, and shows the values of professionalism in every health care action. The professional aspect forms elements of practice, group retention habits, and habits of mind.	commentary	Huber, et al.	2002	
According to the widespread usage of SN websites in the surgeons' society and the whole society, any effort should be done to protect professional opportunities. Instructions matching the accreditation council should be considered for the higher education of the graduates.	descriptive	Landman, et al.	2010	
The sites of online social networks are extensively used by students and the faculty members that may lead to questions about being professional and the appropriate relation between university and the students.	descriptive	Metzger, et al.	2010	
Issues of emerging web applications have raised new questions about the professionalism of the medical fields' students. Some of these contain philosophic challenges for the professors that make it hard to face them without having a specific framework.	commentary	Cain & Romanelli	2009	
Nowadays, technology is improving. Can we make sure that we are facing professional and ethical issues related to family? Using weblogs, other forms of computer-connected communication, and increasingly unique ways that families share their documents in electronic form.	commentary	Tunick & Mednick	2008	

Table 1. Continued.				
Results	Article type	Researchers	year	
The viewpoint of what is important and the issue of being professional in the electronic communication showed E-Professionalism has not been considered. Checking professionalism has led to an increase in awareness, forms the politics and helps examining the related schedules in this field. Identifying and tracking behaviors, developing strategies for reviewing curriculum and creating best practices with advanced technologies at the moment are necessary.	commentary	Drotar, et al.	2010	
Although using technology has a lot of advantages including cognitive skills that is necessary to make the skill of citizenship in an increasingly multi-ethnic society, the alternative strategies for keeping teenagers on the Internet should increase the awareness and technological complexities of adolescents.	commentary	Tynes	2007	
The increase of the doctors' social network usage, along with the ease of finding information in the internet can disrupt personal and professional identities and create new considerations for the professionalism of the doctors in the information age. Professionalism in the digital age is necessary to protect confidentiality, trust, and integrity in the medical profession.	commentary	Mostaghimi & Crotty	2011	
The presence of technology in one of the most important professionals that has always had its own ethics has caused the professionalism issue to be posed for using new technologies in the clinic.	commentary	Gale-Grant, et al.	2013	
Combining the originally traditional values of medicine with social media features forms opportunities and the challenges of medical professionalism. Both issues of challenge and opportunity must be considered in order to strengthen inter-professional and inter-generational discourse.	essay	Essary 30	2011	

Table 2. Studies related to perception of students and teachers about e professionalism (21-32)				
This shows the relationship between online professional education and online behavior with online monitoring. Improving content and publication of social media policies can help maintain organizational priorities, protect patient information and protect young professionals in the online environment.	Focus group	Qualitative	2016	LefebvreC et al.
Medical students saw the online information as a personal threat. They wished for suggestions, but they felt the school is limiting them.	Focus group	qualitative	2010	Chretien KC et al.
Some internal medical students are applying SNSs and communicating with online trainees. Their respective ideas of social networking behaviors resulted in giving effective suggestions, harmonization of the professional constraints between professors, and apprentices in the digital world.	survey	Original article	2011	Chretien KC et al.
Most of the graduated students use social medias. However, increasing the sensitivity of providing a more professional image in an online environment near graduation shows its necessity.	questionnaire	Original article	2013	Ness GL et al.
In general, 68% of respondents agreed that online professionalism is important, and users should receive training on the safe use of social media. However, most formal education programs or well-known institutions do not have standard policies.	Online questionnaire	Original article	2016	Langenfeld ,et al.
Future directions for research include the general outlook for online professionalism, the impact of patient trust, and the use of productive social media as medical professionalism.	Cross-sectional	Original	2018	Chretien & Tuck
It is suggested that undergraduate students be trained on appropriate usage of social medias and monitoring the dangers on the internet.	questionnaire	Original	2016	Kenny & Johnson.
Medical students witness non-professional online behavior by their peers and doctors. Most of the examined behaviors were considered inappropriate, especially if done by doctors.	Cross-sectional	Original	2014	Rocha &de Castro
Like doctors, in medical students the poisoning and sexual orientation is more than the professors. Both medical students and faculty reported that non-professional content was sent by mail.	Cross-sectional	Original	2016	Kitsis ,et al.
The interest of veterinary students to social media, such as Facebook, provides a basis for creating and presenting educational programs for the presence on the Internet. Teachers and administrators of this field may use this information to help create veterinary curriculums which are faced with increasingly high levels of online professionalism.	Cross-sectional	Original	2012	Coe JB et al.
User education profiles had higher professionalism scores than personal profiles, women adhered to the principles of professionalism more than men.	Descriptive	Original	2018	Maben-Feaster et al.

Another research reported to students and teachers perception, attitudes about e professionalism in online environment and social media (Table 2).

Some evidences also stated the construction of questionnaire

about e professionalism of social media in medical sciences (Table3). Many evidences reported mal behavior or non-professional behavior in online environment (Table 4).

Articles also emphasized the role and impact of social

networks on the professionalization process of medical students and its challenges in various positive and negative dimensions. This factor has a facilitating role in promoting

professionalism by growth of knowledge. On the other hand, it can make the professionalization process face many problems. The listed articles address this issue. (Table 5).

Table 3. Questionnaire about e professionalism (33-34)				
Establishing and certification of pharmacy students' licence of thoughts on the professionalism of social media and examining the impact of an educational program on the professionalism of social media.	Questionnaire	Pretest- post test survey	2009	Cain, Scott, & Akers
To develop and validate a scale measuring students' attitudes toward social media professionalism in pharmacy students	Questionnaire	survey	2017	Chisholm-Burns, et al

Table 4. Studies related to professional and non- professional behaviors in virtual environments and their outcomes (35-40)				
Three domains of unprofessional behavior emerged that were related significantly to later disciplinary outcome: (1) poor reliability and responsibility, (2) lack of self-improvement and adaptability, and (3) poor initiative and motivation.		retrospective case-control study,	2017	Teherani A et al.
Incorrect behaviors in virtual networks, Fraud, lying, plagiarism, and disobedience to the rules and regulations. Changing data and data modifications in the use of the Internet can be mentioned as bad behaviors in students.		Survey	2017	Marianne Mak-van der Vosse et al.
Using the phone in restricted areas of unauthorized activity		Descriptive	2013	Subba SH et al.
People with gambling behaviors on the Internet have had more ethical mistakes than non-gamblers in the Internet and on the Internet.		Descriptive	2017	Montes KS, etal
Internet gamblers use the environment for their sick behaviors.		Descriptive	2015	Petry NM, etal
While social networks are emerging in medical practitioners, so with having a significant portion of inappropriate content, professional skills should include training in the enhancement of personal and professional identities in this field		Descriptive	2009	Chretien KC et al.

Table 5. Studies related to role of social network on medical profession (41-48)				
The existing former law provides potential duty for orthopedic surgeons who have access to patients on free social networking platforms. Current community guidelines in the United States and Britain offer reasonable laws that can reduce such risks. However, the lack of a comprehensive overview of legal opinions, government regulations and also practical experience for most surgeons limits the ability to use such an operating system.		commentary	2012	Hyman JL et al.
The space between professors and students as well as professors with residents should be kept professionally. Social networks can lead to a threat to the professionalism of professors.		qualitative	2011	Bongartz J et al.
It is necessary to provide appropriate information on programs that interfere with profession and professionalism, including social networks in the education program of residents.		descriptive	2012	Go PH et al.
This important issue talks about the clinical use of the Internet, such as telemedicine, e-prescribing, online clinical advice, health-related websites, the use of electronic media for clinical collaboration, and patient email (some of them may not be currently available in the medical ethics code)		book	2016	Hors-Fraile, etal
Public health care providers generally believe that the use and response to email and the patient's message in terms of treatment must be different from that used for other matters, and the provision of health care should not be considered as privacy for conducting a search on the Internet / personal sms.		Descriptive	2011	Jent JF et al.
Improper use of social media can cause harm to patients and the medical profession. The failure of privacy, the failure of colleagues or employers, and violations of the doctor's and patient's borders can be mentioned as some threats. Physicians should protect the use of social media to ensure that they meet professional standards.		commentary	2011	Mansfield SJ et al.
Doctors should separate online and professional content and must be aware of the privacy and confidentiality of patients. Physicians should use privacy settings and protect their patient and doctor relationships by protecting their personal information. When doctors observe the material provided by their non-professional colleagues, they are responsible for getting the patients attention to this matter.		commentary	2010	Kind T,et al.
While social networks are emerging in medical practitioners, so with having a significant portion of inappropriate content, professional skills should include training in the enhancement of personal and professional identities in this field.		commentary	2008	Thompson LA et al.

DISCUSSION

These points were extracted from the conclusions of the research.

In this scope review, we aimed to examine all the available evidences about e professionalism with an emphasis on medical sciences; however, the evidences categorized the articles in these fields: "Definition, concept and the importance of virtual professionalism, tools of testing professionalism in the virtual environment, people's perception and outlook of professionalism in virtual environment, inappropriate behaviors in the use of electronic environment and virtual networks, politics of explaining virtual professionalism, and the role of virtual environment in explaining medical professionalism".

Meanings, tools, concept of e professionalism

Many articles have worked on definition, meaning and the importance of virtual professionalism.

The word professionalism comes from profession that means public notification and obligation to society. In this article people are committed that they ensure a social interest (49). In this case, people expect the professionals an important social interest. The aim of this study was examining all the available evidences about e professionalism with an emphasis on medical sciences (50).

Professionalism in the virtual environments is more than a proper E-mail text or the rules of online communication, since the subjects have an online personality and online information in every format that shows their professional identity, views, and behaviors (4).

In other word, virtual professionalism means how you recognize yourself related to your profession in the online field, also it includes insights, actions, and obeying the profession-related codes(2).

Outlooks, professional, and unprofessional behaviors

In another section, people' misbehavior because of being placed in the virtual environment is mentioned. These items included the necessity of informing the students of dangers of unprofessional behaviours and their knowledge about it as well as attention to professionalism (22).

Some consider responsibility and responding a guarantor for professionalism in the virtual environment. With considering the publication of the private documents and violation of personal privacy as an unprofessional behaviour, a need for popularity or positive effect is considered by them as a reason of unprofessional behaviours(51,52).

Some has also mentioned unprofessional behavior as a reason of making false identity (22).

Other items included sending amoral texts, sending and publication of patients' documents, sending evidence about alcohol usage, racism notions, and changing the personal profile after graduation(52,53).

Also items like content Plagiarism, theft of text without mentioning the reference, and mentioning the writer without copyright observance in text usage can be considered as a sign of misbehavior in virtual environment (37).

In another section, students' misbehaving in virtual

environment was mentioned as disobeying the rules and regulations of the online environment, phone usage in forbidden areas, ignoring the personal rights, and copyright in virtual networks.

Perception and insight of the people about professionalism in the virtual environment is another case to be paid attention to from peoples' view and their experience.

From the studies done about people's insight and notion, these contents were mentioned: expanding of virtual curriculum by paying attention to virtual environment, medical sensitivity, and the bad effects of misbehaving on individuals' profession and workplace, appropriate and necessary behaviors in virtual environment, importance of online environment in medical profession and the necessity of teaching politics and its rules to students, the importance of professionalism for graduates and people who inter the medical field, reduction of space between professors and students in virtual environment and improvement of interconnection, necessity of respecting the group as an important issue entering the virtual environment, professionalism as an unreal indicator in the real life in an untouchable way to consider professionalism as a way to live, effects of professionalism on virtual environment and patients' therapy, important effects of taking place in online environment and students' behaviors in the clinic, necessity of strong politics for individuals' proper usage of virtual environment, necessity of new redefinition of professional codes in facing virtual environment and at last professionalism in in virtual environment and medical profession(21-25,27,28,52-53).

Politics of professionalism's expansion in virtual environment

Nowadays, extension of technology and the new challenges in peoples' lives is one of the important issues in this field. This increases the need for designing politics and redefinition of professionalism in virtual environment by changing the professional field, changing the relation between people in different fields like interactions between professor and student, and creating philosophic challenges for professors and education.

Extension of web and online communities is a barrier of professionalism that reminds the necessity of using politics in different committees including medical education. Paying attention to professionalism causes an increase in knowledge, extension of politics, following behaviors and observing them, resuscitation and personal improvement, confirmation of good behaviors, and obeying the redlines possible in this environment(1,2,4,12, 15-18).

Effects of virtual environment on professionalism

The rule of virtual environment in explaining medical professionalism is also one of the items mentioned in the articles. Most of politics and rules of virtual environment has a close connection to the principles of medical professionalism and issues such as observing the principles of communication in dealing with the patient and his information. The ways of communication between the teacher and the student as well as the relationship with peers in parallel with other professional principles such as accountability and responsiveness, challenge students with

unforeseen problems. Also it can be achieved by creating positive occupational behaviors in the field of patient care, reducing the distance between the teacher and the student, promoting scientific discussions in the environment, as well as enhancing patient care skills and optimizing the use of it (41,42, 44, 48,53).

Professionalism's testing tools in online environment

Some studies are also done around professionalism in virtual networks for groups like Pharmacy Professionalism Instrument (PPI). This survey was connected with fields including forgiveness, responsibility, redemption, obligations, honesty, coherence, and respecting people (33-34).

One of the limitations of this article is the less number of articles in the field of virtual professionalism.

This indicates that the studies conducted in this field are not sufficient and the research in this field is new.

Therefore, we suggest that various review qualitative research as meta synthesis, meta-analysis of general research,

and more comprehensive study with Umbrella analysis to be performed in this field.

With the former research done on the evidences of professionalism in virtual environment, we can say that according to its importance in medical profession, it's necessary that the professionalism's index get fixed for the users and people's adherence in education and individuals' function be focused on. This subject besides supplying the professionalism's index can also expand moral ethics in the virtual environment and provide the basis of having professional ethics in the virtual environment for the society.

Ethical considerations

Ethical issues (Including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc.) have been completely observed by the authors.

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