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ORIGINAL ARTICLE

Medical Students' Points of View on the Quality of Supervision and the Electronic Defense Session in an Iranian Private University

Background: Writing a thesis is an indicator for evaluating individual competence in conducting research and research skills. The study aimed to examine students' points of view on the quality of supervision and the process of theses implementation electronically and virtually has been done during the COVID-19 pandemic at Islamic Azad University, Mashhad Medical Sciences unit.

Method: In a cross-sectional study, 42 medical students participated by responding to the Postgraduate Research Experience Questionnaire, which assessed nine areas related to thesis implementation and defense in electronic and virtual environments. It was conducted in five areas: Title selection, supervisor, proposal fulfillment process, thesis fulfillment process, and final report. The PREQ was introduced by the Australian Department of Employment, Training, and Youth Affairs to respond to the quality and efficiency of higher education (ACER 2000). Finally, the data collected in this study were analyzed using SPSS version 21 software.

Results: The research results indicated that the University's infrastructure and facilities are generally favorable, except for the evaluation and defense of the thesis, which received a score of 2.13, indicating an unfavorable rating. The other aspects of thesis writing were assessed as relatively favorable.

Conclusion: Students consider the status of theses in the general medicine program at the Islamic Azad University, Mashhad Medical Sciences unit, relatively good in most aspects. However, the thesis defense is viewed as unfavorable. To address this issue, it is important to identify the causes of the existing problems and work on eliminating weaknesses while strengthening the positive aspects.

Key Words: Medical Students, COVID-19, Thesis Writing, Postgraduate Research Experience Questionnaire

آراء طلبة الطب حول جودة جلسات الإشراف والدفاع الإلكتروني في جامعة إيرانية خاصة

الخلفية: كتابة الأطروحة هي مؤشر لتقييم كفاءة الفرد في إجراء البحوث ومهارات البحث. هدفت هذه الدراسة إلى التعرف على آراء الطلاب حول جودة الإشراف وعملية تنفيذ الرسائل العلمية إلكترونياً وافترضاً أثناء تفشي فيروس كورونا المستجد (كوفيد-19) في فرع العلوم الطبية بجامعة آزاد الإسلامية في مشهد.

الطريقة: في دراسة مقطعية، شارك 42 طالباً في كلية الطب من خلال الرد على استبيان تجربة البحث في الدراسات العليا الذي قام بتقييم تسعة مجالات تتعلق بتنفيذ الأطروحة والدفاع عنها في البيئات الإلكترونية والافتراضية. تم تطبيق هذا الاستبيان في خمسة مجالات: اختيار العنوان، المشرف، عملية الاقتراح، عملية الأطروحة، والتقرير النهائي. تم تقديم استبيان تجربة البحث في مرحلة الدراسات العليا (PREQ) من قبل وزارة التوظيف والتدريب وشؤون الشباب الأسترالية للاستجابة لجودة وكفاءة التعليم العالي (ACER 2000). وأخيراً، تم تحليل البيانات التي تم جمعها في هذه الدراسة باستخدام برنامج SPSS الإصدار 21.

النتائج: تشير نتائج البحث إلى أن البنية التحتية والمرافق الجامعية مرغوبة بشكل عام. باستثناء تقييم الرسالة ومناقشتها، والتي حصلت على درجة 2.13، وتم تصنيف الجوانب الأخرى لكتابة الأطروحة على أنها إيجابية نسبياً.

النتيجة: يرى الطلبة أن وضع الرسائل العلمية في دورة الطب العام في فرع العلوم الطبية بجامعة آزاد الإسلامية يشهد جيد نسبياً في معظم النواحي. ومع ذلك، يعتبر الدفاع عن الأطروحة أمراً غير مرغوب فيه. ولمعالجة هذه المشكلة، من المهم تحديد أسباب المشاكل القائمة والعمل على معالجة نقاط الضعف وتعزيز الجوانب الإيجابية.

الكلمات المفتاحية: طلاب الطب، كوفيد-19، كتابة الأطروحة، استبيان تجارب البحث في التعليم العالي

دیدگاه دانشجویان پزشکی در مورد کیفیت نظارت و جلسه دفاع الکترونیکی در یک دانشگاه خصوصی ایران

زمینه و هدف: نگارش پایان نامه شاخصی برای ارزیابی شایستگی فردی در انجام پژوهش و مهارت های پژوهشی است. این مطالعه با هدف بررسی دیدگاه دانشجویان در خصوص کیفیت نظارت و روند اجرای پایان نامه ها به صورت الکترونیکی و مجازی در زمان شیوع بیماری کووید-19 در دانشگاه آزاد اسلامی، واحد علوم پزشکی مشهد انجام شده است.

روش: در یک مطالعه مقطعی، 42 دانشجوی پزشکی با پاسخ به پرسشنامه تجربه پژوهشی تحصیلات تکمیلی که نه حوزه مرتبط با اجرای پایان نامه و دفاع از آن در محیط های الکترونیکی و مجازی را ارزیابی می کرد، شرکت کردند. این پرسشنامه در پنج حوزه انتخاب عنوان، استاد راهنما، فرایند انجام پروپوزال، فرایند انجام پایان نامه و گزارش نهایی انجام شد. پرسشنامه تجربه پژوهشی تحصیلات تکمیلی (PREQ) توسط وزارت اشتغال، آموزش و امور جوانان استرالیا برای پاسخگویی به کیفیت و کارایی آموزش عالی (ACER 2000) معرفی شده است. در نهایت، داده های جمع آوری شده در این مطالعه با استفاده از نرم افزار SPSS نسخه 21 تجزیه و تحلیل شدند.

یافته ها: نتایج تحقیق حاکی از آن است که زیرساخت ها و امکانات دانشگاه به طور کلی مطلوب است. به جز ارزیابی و دفاع از پایان نامه که امتیاز 2/13 را کسب کرد. سایر جنبه های نگارش پایان نامه نسبتاً مطلوب ارزیابی شد.

نتیجه گیری: دانشجویان وضعیت پایان نامه های دوره پزشکی عمومی دانشگاه آزاد اسلامی واحد علوم پزشکی مشهد را در اکثر جهات نسبتاً خوب می دانند. با این حال، دفاع از پایان نامه نامطلوب تلقی می شود. برای پرداختن به این موضوع، شناسایی علل مشکلات موجود و تلاش بر روی رفع نقاط ضعف و تقویت جنبه های مثبت، حائز اهمیت است.

واژه های کلیدی: دانشجویان پزشکی، کووید-19، نگارش پایان نامه، پرسشنامه تجربیات پژوهشی تحصیلات تکمیلی

ایرانی نجی یونیورسیتی میں نگرانی کے معیار اور الیکٹرانک ڈیفنس سیشن کے بارے میں میڈیکل کے طلباء کا نقطہ نظر

پس منظر: ایک مقالہ لکھنا تحقیق اور تحقیقی مہارتوں کو انجام دینے میں انفرادی قابلیت کا اندازہ کرنے کا ایک اشارہ ہے۔ اس مطالعہ کا مقصد نگرانی کے معیار اور مقالہ جات کے نفاذ کے عمل کے بارے میں طلباء کے نقطہ نظر کا جائزہ لینا تھا اور اسلامی آزاد یونیورسٹی مشهد میڈیکل سائنسز یونٹ میں COVID-19 ویائی امراض کے دوران الیکٹرانک اور عملی طور پر کیا گیا تھا۔

طریقہ: ایک کراس سیکشنل اسٹڈی میں، 42 میڈیکل طلباء نے پوسٹ گریجویٹ ریسرچ کے تجربے کے سوالنامے کا جواب دے کر حصہ لیا، جس میں تھیسس کے نفاذ اور الیکٹرانک اور ورچوئل ماحول میں دفاع سے متعلق نو شعبوں کا جائزہ لیا گیا۔ یہ پانچ شعبوں میں منعقد کیا گیا تھا: عنوان کا انتخاب، سپروائزر، تجویز کی تکمیل کا عمل، مقالہ کی تکمیل کا عمل، اور حتمی رپورٹ۔ اعلیٰ تعلیم کے معیار اور کارکردگی (ACER 2000) کا جواب دینے کے لیے آسٹریلوی محکمہ روزگار، تربیت، اور نوجوانوں کے امور کے ذریعے PREQ متعارف کرایا گیا تھا۔ آخر میں، اس مطالعہ میں جمع کردہ ڈیٹا کا تجزیہ SPSS ورژن 21 سافٹ ویئر کے ذریعے کیا گیا۔

نتائج: تحقیقی نتائج نے اشارہ کیا کہ یونیورسٹی کا بنیادی ڈھانچہ اور سہولیات عام طور پر سازگار ہیں، سوائے مقالے کی تشخیص اور دفاع کے، جس نے 2/13 کا اسکور حاصل کیا، جو کہ ایک ناموافق درجہ بندی کی نشاندہی کرتا ہے۔ مقالہ نگاری کے دیگر پہلوؤں کو نسبتاً سازگار قرار دیا گیا۔

نتیجہ: طلبہ اسلامی آزاد یونیورسٹی، مشهد میڈیکل سائنسز یونٹ میں جنرل میڈیسن پروگرام میں مقالہ جات کی حیثیت کو نسبتاً بہتر سمجھتے ہیں۔ تاہم، تھیسس کے دفاع کو ناموافق سمجھا جاتا ہے۔ اس مسئلے کو حل کرنے کے لیے ضروری ہے کہ موجودہ مسائل کی وجوہات کی نشاندہی کی جائے اور مثبت پہلوؤں کو تقویت دیتے ہوئے کمزوریوں کو دور کرنے پر کام کیا جائے۔

کلیدی الفاظ: میڈیکل اسٹوڈنٹس، COVID-19، تھیسس رائٹنگ، پوسٹ گریجویٹ ریسرچ تجربہ سوالنامہ

INTRODUCTION

Thesis writing is a key component of the research and development process within the educational system. Three main factors contribute to the successful development of a thesis: the professor, the student, and the educational system itself. These elements interact and are vital in determining the quality of the thesis. For students, writing a thesis marks the beginning of their academic journey, showcasing their innovations, inventions, self-reliance, and perseverance (1,2). Students may find it difficult to write their thesis if they do not learn the appropriate research methods, receive guidance from experienced professors and supervisors, and have access to a suitable and encouraging environment. Additionally, the absence of any of these three factors can result in a loss of financial and time resources, leading to student frustration (3-5). The key factors for producing an excellent thesis include guidance, skill development, a scientific environment, an evaluation process, clear goals, appropriate infrastructure standards, and student satisfaction with the thesis writing experience (6,7).

This study aimed to assess the students' point of view on the quality of supervision and implementation of the medical thesis by using the virtual implementation and defense at Islamic Azad University, Mashhad Medical Sciences unit during the COVID-19 pandemic.

METHODS

This project was a cross-sectional study conducted among medical students over an academic year. We collected and analyzed the students' perspectives on the quality of supervision and the electronic defense sessions at the Islamic Azad University, Mashhad Medical Sciences unit during the COVID-19 pandemic. The ethical code of study is IR.SUMS.REC.1399.1212. This study was conducted via the census method. The inclusion criteria consisted of medical students who defended their theses in 2021. Their proposal and final defense sessions were conducted virtually, and all administrative procedures took place over the phone and in virtual meetings due to the COVID-19 pandemic and the limited presence of students on campus. The exclusion criteria were the incomplete responses of the graduated medical students.

The Postgraduate Research Experimental Questionnaire (PREQ), developed by Marsch (7), is used to evaluate postgraduate student experiences in five key areas: title selection, supervisor interaction, proposal fulfillment, thesis completion, and final report. Introduced by the Australian Department of Employment, Education, and Youth Affairs, the PREQ assesses higher education quality and efficiency. It surveys students' perceptions regarding supervision, support, intellectual environment, and

expectations. Initially validated by the Australian Graduate Association, it helps universities measure research performance and individual student experiences through a 5-point Likert scale, with an additional question on overall satisfaction.

We utilized the Farsi version of the PREQ, which was adapted by Behzadi et al. Behzadi modified the questionnaire to better fit the educational context of Iranian universities, addressing various aspects of students' research experiences. The validity and reliability of this version were confirmed at Mashhad University, with a Cronbach's alpha of 0.975. Additionally, in 2019, Pourbayramian at Iran University of Medical Sciences verified that the Content Validity Index (CVI) was 0.76, the Content Validity Ratio (CVR) was 0.57, and the Cronbach's alpha coefficient was 0.97 (8, 9). Various adaptations of this questionnaire have been used in Iranian educational literature and research studies (10-12). This questionnaire is structured into four main sections: (i) general demographic information, (ii) details about the thesis, including the topic and area of study, and (iii) an assessment of factors contributing to students' satisfaction with their research experience. This section uses a five-point Likert scale and covers aspects such as the proposal approval process, supervision, university infrastructure and facilities, conditions for intellectual development, skills development, clarification of processes, criteria, goals, and thesis defense, and (iv) an evaluation of overall satisfaction and challenges encountered during the research experience (8, 9).

After their dissertation defense, a questionnaire link was sent to the graduated medical students. The link was sent up to four times to ensure as many graduated students answered the questionnaire as possible. Finally, the data collected in this study were analyzed using SPSS version 21 software and descriptive tests of frequency, mean, and percentage; mean difference tests, independent sample t-test, paired sample t-test, and one-way analysis of variance (ANOVA) were used to analyze them.

RESULTS

The survey revealed that 83% of the respondents were female, while 16.7% were male. Most students selected their thesis topics based on suggestions from their supervisors. The majority of thesis topics were focused on the clinical field (59.5%), followed by medical education (23.8%), basic sciences (11.9%), and interdisciplinary studies (4.8%).

The scores for the approval process of the preliminary plan (proposal) averaged 2.39 ± 0.868 , indicating a relatively good level of achievement. However, the results revealed that students encountered difficulties during the early stages of their research projects, suggesting that the overall situation was not entirely favorable. Students' ratings regarding the quality of guidance from supervisors averaged 2.37 ± 0.996 ,

which can be considered relatively favorable. A significant number of students (60%) expressed dissatisfaction with the facilities provided by the university. Additionally, the students' scores for intellectual development were at a medium level or lower than the median, indicating that the faculty may not be meeting students' expectations.

All scores related to skills development in thesis writing showed an upward trend (Table 1). The majority of responses indicated agreement or strong agreement that writing a thesis contributed to the enhancement of their skills. Every score in the Clarification of Processes, Criteria, and Goals exceeded the median, indicating that thesis writing significantly improves students' legal knowledge and understanding of thesis defense rules. Due to the COVID-19 pandemic, the thesis defenses for this study were conducted virtually, and the results reveal that students were satisfied with the thesis defense process (Table 2).

This study revealed that students and supervisors scored highly on items related to fairness during defense meetings and supervisor support throughout the defense process. However, the aspects concerning infrastructure, administration, and guidance for preparation received notably lower scores. Regarding

the evaluation of research experience, students expressed relatively favorable opinions, with a mean score of 2.52 ± 0.784 . Nonetheless, these results indicate that the situation is still far from ideal (Table 3).

DISCUSSION

The study aimed to examine students' perspectives on the quality of supervision and the process of thesis implementation electronically and virtually during the COVID-19 pandemic at the Islamic Azad University, Mashhad Medical Sciences unit. The research results indicated that the University's infrastructure and facilities are generally favorable, except for the evaluation and defense of the thesis, suggesting an unfavorable rating. The other aspects of thesis writing were assessed as relatively favorable.

The online survey achieved a response rate of 50%, which is generally lower than the response rates obtained when the questionnaire is administered in person. For instance, reports indicate response rates of 87% (1), 73% (13), and even 100% (14) when conducted by the faculty of a medical school. Additionally, the survey found that 83% of responders were female, a higher percentage compared to studies such as Shahshani, which reported 64% (14), and Karimi, which reported 50% (15).

No.	Item	Strongly agree N (%)	Agree N (%)	Somewhat Agree N (%)	Disagree N (%)	Strongly Disagree N (%)
1	Research experience has improved my ability to plan individual and social activities.	9 (21%)	16(39%)	11(26%)	3(7%)	3(7%)
2	As a result of my research experience, I was able to enhance teamwork with other researchers.	3(7%)	11(26%)	18(43%)	9(22%)	1(2.3%)
3	Improve information literacy research experience (identifying, locating, categorizing, and using information resources) in me.	7(17%)	13(31%)	17(41%)	3(7%)	2(5%)
4	The dissertation implementation process has greatly developed my problem-solving skills.	5(12%)	10(24%)	19(47%)	5(12%)	3(7%)
5	As a result of my research experience, I am confident in my ability to manage a research project.	8(19%)	14(30%)	15(39%)	3(7%)	2(5%)
6	My research experience greatly improved my analytical skills.	7(17%)	14(30%)	15(39%)	3(7%)	3(7%)
7	Research experience led me to learn citation techniques (correct writing of sources and references, in-text citations, etc.).	12(29%)	13(31%)	14(30%)	3(7%)	-
8	My research experience greatly enhanced my scientific writing skills.	10(24%)	11(26%)	17(40.7%)	3(7%)	1(2.3%)
9	As a result of research experience, I gained more knowledge and understanding of the research communities in my field and field of study.	9(21.7%)	11(26%)	19(47%)	2(5%)	1(2.3%)
10	As a result of my research experience, I gained the ability to learn independently.	7(16%)	12(29%)	21(50%)	2(5%)	-
11	My research experience increased my proficiency in English.	9(21.7%)	11(26%)	14(30%)	7(16%)	1(2.3%)
12	Research experience gave me the power of research problem-solving.	7(16%)	12(29%)	18(43%)	3(7%)	2(5%)

Table 2. Dissertation defense						
No.	Item	Strongly Agree N (%)	Agree N (%)	Somewhat Agree N (%)	Disagree N (%)	Strongly Disagree N (%)
1	The process of defending my dissertation was fair.	9(21%)	11(26%)	15(35.5%)	3(7%)	4(9.5%)
2	My dissertation defense session was held according to a pre-arranged schedule.	16(38%)	10(24%)	9(21%)	4(9.5%)	3(7%)
3	The arbitration process (pre-defense study) was completed within a reasonable and acceptable time.	2(5%)	6(14%)	8(19%)	14(31%)	12(29%)
4	In order to prepare for the defense of the dissertation, I was given a proper guide by the supervisor and the training group.	4(9.5%)	4(9.5%)	13((31%)	13(31%)	8(19%)
5	I received appropriate support and guidance to correct changes in my dissertation after the final oral defense.	9(21%)	9(21%)	20(48%)	2(5%)	2(5%)
6	The process of defending and evaluating my dissertation was disciplined, not relational. (My relationship with professors and professors with each other)	6(14%)	9(21%)	23(54.5%)	(2.5%)	3(7%)
7	My score was based on the true value of my research work.	11(26%)	17(41%)	8(19%)	3(7%)	3(7%)

Table 3. Research problems in gaining research experience.						
No.	Item	Strongly agree N (%)	Agree N (%)	Somewhat Agree N (%)	Disagree N (%)	Strongly Disagree N (%)
1	Select a topic	7(16%)	17(40%)	10(24%)	6(14%)	2(5%)
2	Writing a proposal	8(19%)	12(29%)	14(30%)	5(12%)	3(7%)
3	Access to information resources required for research	5(12%)	5(12%)	19(45%)	10(24%)	3(7%)
4	Analysis and description of statistical data	5(12%)	8(19%)	16(38%)	8(19%)	5(12%)
5	Data collection in the form of a research plan	6(14%)	8(19%)	4(9.5%)	6(14%)	1(2.5%)
6	Not having enough time to deal with the dissertation	9(21%)	13(31%)	11(26%)	5(12%)	4(10%)
7	Thesis writing (chapters, references, etc.)	4(9.5%)	16(38%)	18(42.5%)	2(5%)	2(5%)
8	How to communicate with the tutor	13(31%)	14(33%)	6(14%)	4(10%)	5(12%)
9	Administrative process of university, faculty, and department	9(20%)	10(24%)	11(26%)	7(16%)	10(24%)

The results indicated that most students selected their thesis topics based on suggestions from their supervisors. This finding aligns with the study by Derakhshan far (16) but contrasts with Radafshar (10), which found that the majority of students chose their thesis subjects independently. In this study, the clinical field accounted for the most popular thesis topics, while medical education was the second most chosen area. Similar to the studies conducted by Karimi (15) and Nieminen (17), the most frequently selected topics fell within the clinical groups and were descriptive-cross-sectional.

Our study indicates that students perceive the approval process for the preliminary plan positively. However, challenges arose during the early research

stages, as over half of faculty members identified issues like poor coordination, insufficient time, and inconsistent decision-making as major obstacles to completing projects (18). The findings of students' opinions regarding the quality of supervisors' guidance were relatively favorable. The results showed that the supervisor should be able to clarify thematic, scientific, and statistical ambiguities of research. Of course, this depends on the supervisor's approach to writing the thesis (19).

In Iran, medical students (MDs) must write a thesis to enhance their professional clinical skills and ability to conduct clinical research. Yuan et al. reviewed theses based on various criteria, including the number of supervisors, word count, novelty of sources, inclusion

of specific sources and indexes, sample size, and ethics approval. Their findings indicated that more abstract words and references were more significant indicators of the distinction between excellent and average theses than other criteria. These factors are largely influenced by the supervisors, departments, and faculty members (20). In our study, the students' scores in intellectual development were medium or below the median, suggesting that the faculty had not met the students' expectations.

The organization's research management infrastructure includes management of buildings and facilities, administrative costs, current and cash payments, and project records for the period required by the audit organization (21). However, in this study, as a private university, students' research experience is different at Islamic Azad University than other medical universities since this university is the only private medical school in the country (Iran). The infrastructure and facilities differ from public universities. Students tend to be unsatisfied (60%) with their experience with the facilities provided by the university. This result showed that much improvement needs to be done to reach a standard level of providing adequate infrastructure for students. It is also crucial to provide students with more accessible and up-to-date databases and communication methods to improve the quality of the student research process (22).

The impact of writing a thesis on enhancing medical students' skills has been highlighted in various studies (23). Our findings indicate that all measured skills related to thesis writing showed improvement. Most respondents agreed or strongly agreed that thesis writing contributed to their skills development, aligning with the results from the studies by Fishman and Jha (24). Another indicator of a good thesis is the observance of the principles of research methodology. Nearly 90% of inaccuracies in research methodology have been reported in students' theses (17). The methodology also allows authors to set study standards and demonstrate the data that have been collected by using accepted clinical methods and standards (21). Our results showed that all scores in this area are above the median, which explains that thesis writing improves the legal knowledge and understanding of thesis defense rules.

The instructions for electronic thesis defense must be posted on the university website or shared with the graduating student. The students must familiarize themselves with them and prepare accordingly before their defense. In this study, due to the COVID-19 pandemic, thesis defenses have been conducted virtually, and the results showed that students are satisfied with the thesis defense process.

Medical students, due to improving their ability to interpret while working as a physician and analytical problem solvers, generally have a positive attitude

toward science and scientific research projects. (11,16). This study showed high scores in the items related to the student and supervisors, such as fairness in defense meetings or supervisor support in defense meetings, but items related to infrastructures and administration and supportive guide for preparation in the defense had low scores. Additionally, journal publication of research indicates the value and international acceptance of the research thesis (11). The results of this study showed that only 14% of our written thesis was published in domestic and international journals and passed by peers.

One of the problems of most students in thesis writing is their weakness in the research method of the field of study and the lack of mastery of statistical software, which forces them to use outsourcing for it. At the same time, the university should hold training courses for students to learn how to work with this software or provide these facilities by themselves (18). According to our research, students have an excellent desire to participate in research work, however, problems like lack of time to enter this field due to busy studies and livelihood issues cause them to be discouraged or unwilling. The lack of supervisors willing to collaborate on research involving students is a major factor contributing to students' disinterest in research work. However, for students, the limited opportunities in this area mean that writing a thesis may be their only valuable chance to enhance their research knowledge, even if only to a minimal extent (25).

LIMITATIONS

Study limitations include a small population, constraints of university infrastructure to continue research, a lack of student cooperation, the impact of the COVID-19 pandemic, and various financial and time limitations.

CONCLUSION

Students consider their status in the general medicine program at the Islamic Azad University, Mashhad Medical Sciences unit, relatively good in most aspects. However, the thesis defense is viewed as unfavorable. To address this issue, it is important to identify the causes of the existing problems and work on eliminating weaknesses while strengthening the positive aspects. The findings from this study are highly valuable for the university management team and policymakers, as they inform future planning for providing adequate support and resources to graduate and research students. Such support is expected to enhance graduate student satisfaction and motivate them to undertake innovative projects.

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. This study was approved by Research Ethics Committee of Shiraz University of Medical Sciences with an ID number (IR.SUMS.REC.1399.1212.).

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