ORIGINAL ARTICLE

CONTENTS

New training, new attitudes: non-clinical components in Ukrainian medical PHDs training (regarding critical thinking, academic integrity and artificial intelligence use)

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ABSTRACT

Aim: The paper studies the attitude to critical thinking, academic integrity and the Artificial Intelligence use of the Ukrainian medical PhD students.

Materials and Methods: In 2023, 56 medical PhD students from the Bogomolets National Medical University, Kyiv, Ukraine, underwent the survey. The participation was voluntary, upon the oral consent. The data included in the survey questions include various aspects related to critical thinking, analysis skills, and attitudes towards plagiarism.

Results: A significant majority of the medical PhD students (75%) place high importance on critical thinking. While a majority (89.29%) apply analysis and critical thinking skills in their English studies, there's a notable percentage (7.14%) that is uncertain. Although most are aware of the unacceptability of cheating and plagiarism (75%), a small proportion admit to having plagiarized (12.5%). Only 30.4% of the respondents reported using GPT Chat for study. Responses to witnessing peers plagiarize or using Artificial Intelligence show a varied attitude, with many expressing unwillingness to report such incidents (30.36%).

Conclusions: The survey highlights the recognized importance of critical thinking in academic study among medical PhD students, while also points to areas where attitudes and practices regarding these skills could be improved. The study shows a vast area for improvement regarding academic integrity, as almost one-third of respondents need more defined standards. This definitely puts some questions before the present medical postgraduate education, and requires change of the educational paradigm, clear rules of academic conduct, and a system of control.

KEY WORDS: Postgraduate education, integrity, Ukrainian PhDs

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INTRODUCTION

In the medical education today, the introduction of non-clinical components (such as critical thinking and academic integrity) into medical PhD (Doctors of Philosophy) training programs is becoming increasingly important. This article studies the reform Ukrainian medical PhD programs, since 2017, and particularly focuses on the integration of these essential skills into the curriculum. The push to this reflects a global trend, not only in Ukraine, and it acknowledges the significance of physician training, beyond the traditional clinical competencies.

Nowadays, Ukraine, with its rich history in medical education, is at the forefront of redefining medical PhD training. Reforming the postgraduate education has not just responded to the requirements of modern healthcare, it represented active training approach. In the article we are going to study the attitude of the medical PhDs and perception of critical thinking and academic integrity in their curricula, which originally aimed to train clinically and intellectually effective medical researchers. We suppose that the need for such medical education changes may be explained for the progressing medical environment, its technological progress, ethical issues, and evidence-based practice. Critical thinking is the basis for academic and professional performance, as it helps us manage challenges. Academic integrity, on the other hand, provides a sense of ethical responsibility, and ensures that the future medical PhDs will keep to the highest standards of honesty and professionalism. Present technology, including the AI, tremendously re-formats the real efforts of the academicians, and requires a new educational philosophy.

In order to study the current perception by medical PhDs of the non-clinical components in their curricula, we have held the survey at Bogomolets National Medical University, Kyiv, Ukraine. It evaluates the current state of non-clinical training among Ukrainian medical PhD students, focusing on their attitudes towards critical thinking and academic integrity. By this, we meant to study the effectiveness of the current teaching PHD strategies, and propose improvements.

AIM

The aim of the article is to study the views on such significant issues of postgraduate education as critical thinking and academic integrity, to learn the perception of these significant academic notions by the Ukrainian medical PhD students, and to offer the possible ways of the education perfection.

MATERIALS AND METHODS

In 2023, 56 medical PhD students from the Bogomolets National Medical University, Kyiv, Ukraine, underwent the survey. The participation was voluntary, upon the oral consent, which explains the small size of a sample, as many medical PhD students preferred not to answer the questions. Furthermore, it needs mentioning, that all the respondents are the Ukrainian citizens, experiencing war attacks of Russia, which may explain their stressed mood and absence of will to engage in any survey.

The data included in the survey questions include various aspects related to critical thinking, analysis skills, and attitudes towards plagiarism. The respondents stated their gender, age, rated the importance of critical thinking ("very important", "important". "undefined", "not very important" and "insignificant"), the necessity of teaching critical thinking in universities(" it is necessary", "it is not necessary", " it is not necessary", "It is classified", or the free choice), experience of application of analysis in the English classes and working with the texts("I do it often", "I do it sometimes", "I don't do it", "I rarely do it", "I never do it"), experience of critical analysis of published sources ("Yes, I do it", "It depends", " NO, I don't do it"), critical evaluation of teachers ("Yes, always", "More yes than no", "It depends", "More no than yes", "No"), necessity of critical thinking ("Yes,", "No", "It depends"), and acceptability of using someone's work from Internet("It is acceptable", "It is more acceptable than unacceptable", "It is not acceptable", "It is more unacceptable than acceptable", "I don't know"), awareness of unacceptability of plagiarism(" I have been told about it", ?I haven't been told about it", " I don't recollect being told about it"), personal experience with plagiarism(" I have plagiarised", " I have never plagiarised", " I can't recollect any cases"), and the reaction to peers plagiarism("I would report such issues", "I wouldn't report such issues", "I don't care about such issues"). The last set of questions was related to the AI (Artificial Intelligence) use: the experience of the AI use in preparation for studies, the experience of making the AI write something for them, and attitude to the AI ("Is the AI use acceptable?", with answers "Acceptable", "Somewhat acceptable", "It's hard to say", "More unacceptable", "Unacceptable").

RESULTS

A close analysis of the data shows several trends and perspectives. The cohort exhibits a near-even gender distribution, with 51.79% male and 48.21% female respondents, which generally corresponds to distribution of male and female medical PhD students in Bogomolets National Medical University. Regarding age, the largest group comprises younger individuals (20-30 years old), representing half of the respondents. Those aged 30-40 years make up 30.36%, while 19.64% are older than 40 years, highlighting a diverse age range among the students.

A substantial majority (75%) of the medical PhD students consider critical thinking skills to be 'Very important'. An additional 21.43% find these skills more important than not, suggesting a strong overall recognition of the value of critical thinking in their academic journey. Only a small fraction view critical thinking as non-important (1.79%) or express indifference (1.79%).

As for teaching critical skills in the medical universities, an overwhelming 89.29% of the students advocate for the inclusion of critical thinking and analysis skills in university curricula across all specialties. A minority (7.14%) believe these skills should not be taught in all specialties, and an even smaller group (3.57%) deems them unimportant, indicating a predominant belief in the necessity of these skills in higher education.

Nearly half of the respondents (48.21%) often apply analysis skills in their academic and medical English classes, and a similar proportion (46.43%) do so sometimes, which suggests a widespread application of these skills in postgraduate humanities studies. However, a small group either rarely applies (1.79%) or does not apply (1.79%) these skills, with an equal percentage unsure about what analysis skills include.

The application of critical thinking skills while working with medical English texts is also significant, with 50% trying to apply them and 44.64% confidently doing so. A small percentage (5.36%) of the respondents sees no point in applying these skills in this context, which reflects varied approaches to critical thinking in academic exercises. This trend is reflected also in answers about critical evaluation of ANY materials published, where 75% stated they did it often, and 23.2% stated "It depends". An important trend is shown in critical attitude of the respondents to the teachers, as 48.2% always evaluate their teachers' words, and 32.1% are more likely to do it, which overall forms the majority of critically thinking cohort. Only 14.3% stated "It depends", which could also be added, under the appropriate circumstances, to those who critically evaluate everything.

As for the plagiarism and cheating unacceptability, three-quarters of the medical PhDs acknowledge the

unacceptability of cheating and plagiarism, and this indicates their high level of awareness of academic integrity. However, 23.21% do not share this view, and a small fraction (1.79%) provided non-specific responses. While most PhD students (87.50%) did not report plagiarizing during their PhD studies, 12.50% admit to it, which highlights ongoing challenges in ensuring academic honesty. The PhD students' responses to peers plagiarizing are varied. A significant portion is uncertain (32.14%) about how they would react, and 30.36% are more likely to not complain. Those who would definitely not report such incidents make up 25%, while only a minority would likely (7.14%) or definitely (5.36%) report plagiarizing peers, which illustrates a variety of attitudes towards academic misconduct.

While artificial intelligence has been introduced in the Ukrainian web space, and has been active for nearly a year, its adoption among Ukrainian PhD students appears limited. Only 30.4% of these students reported using GPT Chat for study, and a smaller fraction, 17.9%, acknowledged using GPT (or any other AI application) for writing essays or abstracts. This modest acknowledgement might not necessarily reflect a reluctance to apply AI technologies but rather a delayed adjustment to technological progress. Interestingly, opinions on the use of GPT for academic purposes are divided: 32.1% of respondents view it as unacceptable, equating it to cheating, 25% see it as somewhat acceptable under certain conditions, and 33.9% remain undecided, possibly due to a lack of understanding of its full capabilities and implications. However, we should mention that the age distribution of the group means a huge share of young students, who should be prone to use all newest technological advanced. Due to this, the retarded acceptance by the PhDs of AI technologies seems more than strange.

DISCUSSION

We justify the obtained results, comparing it to the similar studies in the world, as the issue of non-clinical component of the medical training has been raised by authors abroad. Most authors agree to the significance of critical thinking and academic integrity in undergraduate medical education, although the theme remains unleashed regarding the postgraduate education. Shirazi & Heidari [1] have studied the relationship between critical thinking skills, learning styles, and academic achievement in nursing students. Their work puts emphasis on importance of critical thinking in nursing education, it highlights how different learning styles can affect academic success. Similarly, Sullivan et al. [2] have discussed methods of improving clinical teaching of critical thinking, high-quality care, and equity. The authors focused on the importance of integrating these elements into CME, and they emphasize effective training strategies. Also, Hanlon et al. [3] have assessed critical thinking in dental students, as they use the Health Sciences Reasoning Test, where they compare critical thinking abilities across different levels of dental education and practice. Additionally, Borglin [4] supports critical thinking, as well as academic writing skills as the crucial in nurse education. The author underscores the significance of these skills in nursing practice, he suggests methods how to integrate them into nursing curricula. Also, Mitchell & Carroll [5] have dealt with academic and research misconduct in PhD education, as they are focusing on issues with students and supervisors. The paper describes ethical doctoral challenges, and suggests ways to improve the academic integrity. Regarding other countries, Rajovic et al. [6] have examined attitudes to plagiarism among PhD medical students in Serbia, while Rokni et al. [7] have investigated the prevalence of plagiarism in Iran, where a broad perspective on academic integrity issues in the region has been presented. Cerdà-Navarro et al. [8] have analyzed academic integrity policies against academic misconduct in postgraduate studies, and focuses on Spanish universities. Ng et al. [9] have explored the integration of clinical and research training in MD-PhD programs, Bonham [10] studies the history of MD-PhD training and discusses its future prospects. Overall, the papers could be grouped into three categories: those who talk about the critical thinking and academic achievement (Shirazi & Heidari [1] and Hanlon et al. [3], Borglin [4]); about academic integrity and misconduct: Mitchell & Carroll [5] and Rajovic et al.[6], Rokni et al. [7] and Cerdà-Navarro et al. [8]; and about the structure and effectiveness of medical training programs (Sullivan et al.[2], Ng. et al. [9] and Bonham [10]. Overall, all authors admit significance of the critical thinking skills. And most authors admit the problem of academic misconduct, plagiarism and cheating which is growing among the PhDs. In fact, no foreign study has been dedicated to the perception by the PhDs of certain significant aspects of their study, such as critical thinking necessity, or the AI use, and the theme is found to be extremely fascinating.

Our study reflects attitude of the Bogomolets PhD students to two most important issues of education: critical thinking and academic integrity, including the AI. From this analysis, it is evident that a significant majority of the medical PhD students place high importance on critical thinking and believe it should be taught in universities. While a majority apply analysis and critical thinking skills in their English studies, there's

a percentage that is uncertain or does not see the point in doing so, particularly in language studies. This indicates potential gaps in understanding or valuing these skills among some PhD students and puts challenges before the curriculum of the PhDs training. The course "Critical thinking" is not taught directly, though the medical PhDs study other numerous courses, such as "Philosophy of Science", "Methods of Research", and, anyway, a certain proportion of the surveyed does not regard critical thinking as a significant skill for an academician, which means necessity for transformation of curriculum, or more thorough selection of the applicants at enrolment.

A vivid example of application of the critical skills is their use at a certain course class: English, where almost a half stated use of skills "sometimes", which means mechanical uptake of the knowledge and material. So, by transitioning from the overall understanding of the critical skills necessity by majority, and narrowing the issue to certain courses, with decreasing group of those who find them necessary, we realize that emphasis on integration of critical skills in teaching EVERY course should be done, and it should be done long before the Postgraduate course, but not only during the undergraduate studies.

Critical thinking skills, taught during the undergraduate education, will lead to the development of the critical perception of any information, including that reproduced by medical teachers. Of the surveyed, almost one third stated they were more likely to critically evaluate their teachers' words, and a small portion hesitated, which, under the authoritative circumstances and absence of academic school will lead to poor critical thinking skills after graduation. So, we would like to stress upon the necessity of application of critical skills, starting from the first university years, which would motivate both students and their teachers. But this requires a thorough change of educational paradigm, on the state level.

In terms of academic integrity, while there is a high level of awareness of the unacceptability of cheating and plagiarism, a worrying proportion of Medical PhD students admit to having plagiarized. Additionally, the varied responses to witnessing peers plagiarize suggest a reluctance or uncertainty in addressing academic misconduct among peers. All this necessitates several steps required by the educational institutions. Firstly, during the undergraduate education, the unacceptability of plagiarising should be taught, and this should be supported on the state level, incorporated into practice of checking the students' papers by anti-plagiarism software and adopting punishments for plagiarising. Secondly, to prevent plagiarising, extra courses should be introduced, teaching how to write their own texts, analyze the sources, review the works and cite them properly. This should compose the education component, the same as a set of theoretical medical or clinical courses. Thirdly, the model of academic integrity should be adopted on the state educational level (which has not been done in Ukraine yet), with clear rules of game, awards and punishments. The absence of such regulation, and undefined rules lead to not serious attitude of the students to academic integrity.

A separate issue is the AI use, regarding the academic integrity. Being a newly introduced software, it has not gained popularity among the Ukrainian PhDs yet, although its use may break all rules of academic conduct, and, both the Ukrainian students and teachers need clarification on what it represents, how it could be used without breaking the academic conduct rules and cheating. All this requires changes of the curriculum for the undergraduate students, introduction of the AI use into their study, and a separate course for the medical PhD courses teachers, to clarify the AI application use and prevent misconduct manifestations.

CONCLUSIONS

The significance of critical thinking for the Ukrainian medical PhD students is undeniable, although there are evident areas where practices regarding these skills could be improved or studied thoroughly. The survey shows high importance which the medical PhDs place on the critical thinking.

Regarding the academic integrity, the study shows a vast area for improvement, as a certain percentage of the surveyed medical PhD students need more defined standards of academic integrity, particularly regarding the AI. All this necessitates for a deeper introduction of critical thinking skills, both during the undergraduate and postgraduate studies, and the academic integrity course. Altogether, this requires a defined state policy, introduction of critical thinking course within the educational curricula, together with the professional courses, introduction of academic integrity policy, system of awards and punishments, and a deeper understanding of the AI capabilities, both for the Ukrainian teachers and PhD students.

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CONFLICT OF INTEREST

The Authors declare no conflict of interest

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