

Research article

УДК 372.881.1

<https://doi.org/10.24888/2073-8439-2025-71-3-47-55>

METHODOLOGICAL SPECIFICITIES AND DIFFICULTIES OF TEACHING LATIN WITHIN AN “ENGLISH MEDIUM” PROGRAM

Larissa A. Khokhlova

Northern State Medical University, Arkhangelsk, Russia, nsmu.lkhokhlova@yandex.ru,
<https://orcid.org/0009-0008-0079-8952>

Abstract. *At the beginning of this century English has gained the status of the international communication language. Many leading Russian universities offer education in English (an intermediary language), which makes it possible to neutralize the problems associated with ethnic and national diversity of students' groups. The manuscript objective is to analyze the methodological features and approaches to teaching English Medium Instruction program “Latin Language and Fundamentals of Medical Terminology” to international students. Material and Methods: The study was conducted at the Northern State Medical University, which has been training international students since 1991. Theoretical methods including the analysis of literature sources and the discipline's educational and methodological complex were used. A survey of faculty members and international students was conducted. A general description of the discipline is given. Each of its sections (anatomical, clinical, pharmaceutical terminology) is considered from the view point of teaching specifics in the intermediary language and characteristics of the material perception by international students. Linguistic aspects of English interfering with the effectiveness of the discipline mastering by international students are explored. Difficulties that faculty members face when teaching international students are analyzed. The most interesting aspects of studying Latin and students' suggestions for improving the educational process are revealed. Conclusions: Teaching Latin in heterogeneous, multi-level, multinational student groups with instruction in the intermediary language is a complex process due to: 1) limited class hours; 2) varying levels of international students' language proficiency; 3) the specificity of anatomical, clinical, and pharmaceutical terminology requiring instructors to know numerous synonyms for explanation; 4) linguistic differences between Latin and English systems; 5) the need for methodological approach adaptation.*

Ключевые слова: *pragmatism, philosophy of pragmatism, philosophy of education, digitalization, models of teaching translation*

Для цитирования

Khokhlova, L.A. (2025). Methodological specificities and difficulties of teaching latin within an “English Medium” program. *Psikhologiya obrazovaniya v polikul'turnom prostranstve*, (3), 47–55. <https://doi.org/10.24888/2073-8439-2025-71-3-47-55>

МЕТОДОЛОГИЧЕСКИЕ ОСОБЕННОСТИ И ТРУДНОСТИ ПРЕПОДАВАНИЯ ЛАТИНСКОГО ЯЗЫКА В РАМКАХ ПРОГРАММЫ “ENGLISH MEDIUM”

Л.А. Хохлова

Северный государственный медицинский университет, Архангельск, Россия,
nsmu.lkhokhlova@yandex.ru, <https://orcid.org/0009-0008-0079-8952>

Abstract. *Английский язык в начале этого века получил статус языка межнационального общения. Многие ведущие российские вузы сегодня предлагают обучение на английском языке (языке-посреднике), что позволяет нивелировать проблемы, связанные с этническим и национальным разнообразием студенческих групп. Цель данной статьи - проанализировать методические особенности и подходы к преподаванию дисциплины «Латинский язык и основы медицинской терминологии» иностранным студентам на английском языке. Материалы и методы: Исследование выполнено на базе Северного государственного медицинского университета, осуществляющего подготовку иностранных студентов с 1991 г. Использовались теоретические методы, включающие изучение и анализ литературных источников, учебно-методического комплекса дисциплины. Проведен опрос преподавателей и иностранных обучающихся. Дается общая характеристика дисциплины. Каждый из ее разделов (анатомическая, клиническая, фармацевтическая терминология) рассматривается с точки зрения специфики преподавания на языке-посреднике и особенностей восприятия материала иностранными студентами. Раскрываются лингвистические аспекты английского языка, оказывающие интерферирующее влияние на эффективность усвоения данной дисциплины студентами-иностранцами. Анализируются трудности, с которыми преподаватели сталкиваются при обучении иностранных студентов. Раскрываются наиболее интересные, с точки зрения студентов, аспекты изучения латинского языка и их пожелания по улучшению образовательного процесса. Таким образом, обучение латинскому языку в гетерогенных, разноуровневых многонациональных студенческих группах с преподаванием на языке-посреднике является довольно сложным процессом вследствие 1) небольшого количества учебных часов; 2) разного уровня языковой подготовки студентов-иностранцев; 3) специфики анатомической, клинической и фармацевтической терминологии, требующей от преподавателей знания значительного количества синонимов для объяснения материала; 4) лингвистических различий в системе латинского и английского языков; 5) необходимости адаптации методических подходов.*

Keywords: латинский язык, иностранные студенты, преподавание, язык-посредник

For citation

Khokhlova L.A. Methodological specificities and difficulties of teaching latin within an “English Medium” program // Психология образования в поликультурном пространстве. 2025. № 3 (71). С. 47–55. <https://doi.org/10.24888/2073-8439-2025-71-3-47-55>

Introduction

At the beginning of this century English has gained the status of the international communication language and is rapidly becoming the language of higher education and science. Following global educational trends, many leading Russian universities offer education in English (an intermediary language), which makes it possible to neutralize the problems associated

with ethnic and national diversity of students' groups, significantly reducing the time of socio-cultural and professional adaptation of international students.

English Medium Instruction (EMI) programs meet the demands of academic mobility. As evidenced by our observations and literature review on the issue, these programs are becoming increasingly popular (Angel, Volkova, 2020; Macaro et al., 2020; Melezhik, 2016; Shleynikova, Dementyeva, Makarova, 2024).

Articles on teaching in multinational groups (Kostromina, Stepashov, 2007; Zherlitsyn, Lebedeva, Safina, 2022; Shatalova-Davydova, 2019) and those addressing the specifics of material perception by students speaking different languages appear (Markova, 2015; Stobbe, 2023).

There is a number of publications analyzing current aspects of teaching basic subjects underlying medical education (Goncharenko, Altukhova, Ignatenko, 2016; Myachina, Deryaeva, Deryaeva, Kozhevnikov, 2020; Khokhlova et al., 2018; Khokhlova, Andreeva, Kiseleva, Tikhonova, 2022)

At the same time, the idea of the global use of English as a medium of instruction remains a challenge for the Russian higher education system. It's inevitably linked to issues of international student recruitment, development of new programs and courses incorporating intercultural communication, and English training for faculty members working with international students.

University lecturers face varying English proficiency levels among students from different countries, as well as accent differences, making it difficult for students and lecturers to interact.

Northern State Medical University (NSMU) has been training international students since 1991. English Medium Instruction programs were first introduced in 2006. Currently, the university has over 1,500 international students, most of whom are from India and Pakistan. International students are studying in the “General Medicine” higher education program. All humanities, preclinical, and clinical disciplines are taught in English throughout the entire study period.

The manuscript **objective** is to analyze the methodological features and approaches to teaching English Medium Instruction program “Latin Language and Fundamentals of Medical Terminology” to international students.

Material and Methods

Theoretical methods including the analysis of literature sources and the discipline's educational and methodological complex were used. As a study part, a survey of the faculty members teaching English Medium Instruction program “Latin Language and Fundamentals of Medical Terminology” was performed. Survey participants were asked to complete questionnaires to identify the challenges they face when teaching international students. A survey of first-year international students studying Latin was also conducted. Students were asked to specify the most interesting aspects of studying Latin, difficulties encountered, and their suggestions for improving the educational process.

Results and Discussion

In today's multinational world, Latin remains a relevant international professional language of medicine and biomedical sciences.

The specificity of this subject is in the fact that it is closer to special medical disciplines than to linguistic and socio-humanitarian ones.

“Latin Language and Fundamentals of Medical Terminology” is a core component of all medical disciplines. The subject is taught to NSMU international students as a part of the

“English Medium” program during the first course. The total number of hours is 108, including 54 hours of in-class contact and 54 hours of self-study. During practical classes, students study Latin phonetics, the basics of Latin grammar, and cycles of anatomical, clinical, and pharmaceutical terminology. Upon the course completion, an international student should be able to: read and write in Latin; explain the term meaning based on familiar term elements; translate and write prescriptions according to a given standard, using standard prescription formulations and grammar forms.

Each discipline section has its own specifics in terms of teaching in the intermediary language and material perception peculiarities by international students.

The first challenge a Latin teacher faces is delivering a large amount of study material in a limited time. Therefore, the minimum material amount necessary to familiarize students with the basics of anatomical, clinical, and pharmaceutical terminology is included in the course sections.

The second aspect we face in practice is the varying language proficiency levels of international students. Different levels of English language proficiency complicate the learning process when explaining a new foreign language (Latin) in another one (English). Organizational measures for multi-level grouping based on English proficiency test results are often difficult to implement due to scheduling and maximum number per class.

The third significant factor interfering with international students' learning effectiveness is linguistic aspects related to the difference between Latin and English. English is an analytic language, where grammatical relations are expressed through function words. Latin is recognized as a synthetic language where grammatical relations are expressed within the word. Case endings express a noun's relation to another word, while English uses specific prepositions with nouns. Such linguistic features create certain difficulties for international students even at the initial stage of studying the discipline.

“Latin Language and the Fundamentals of Medical Terminology” is a completely new discipline for the 1st-year students, that has not been studied before. At the same time, even before entering a medical university, English-speaking students already use words like abdomen, occipital, nasal, ligament, plexus, which are almost identical to the Latin words abdomen, inis n; occipitalis, e; nasalis, is; ligamentum, i n; plexus, us m. In practice, however, sound similarity and identical meanings often prevent international students from proper mastering the basics of Latin phonetics and grammar. Teachers face the real problem of English language interference. From the very first classes on the alphabet and phonetics, the teacher has to focus international students' attention on the differences in the names of some letters in Latin and English alphabets, on a significant difference in the pronunciation of sounds and words, spending a lot of time to developing correct Latin reading skills.

Learning ANATOMICAL TERMINOLOGY, the first section of the discipline, involves mastering term structure based on the Latin declension system. Students are not required to study a large amount of grammar. Only aspects necessary for understanding and composing anatomical terms (nominative and genitive singular and plural in the Latin declension system of nouns and adjectives) are covered. International students must learn the basic dictionary, including words and term elements, selected on the basis of their use frequency and subject significance. Words are memorized in their full dictionary form (nouns in the nominative and genitive cases with gender; adjectives of the 1st and 2nd declensions with all 3 gender endings and adjectives of the 3rd declensions in 3 forms). Knowledge of these grammar forms is necessary for proper understanding anatomical terminology. It's especially significant when studying Human Anatomy, which is alongside with the study of Latin and is completely based on Latin terms.

Unlike Russian students, international students find word memorizing more challenging. According to our survey findings, learning by heart is not assigned in Indian schools. Thus, this problem may be related to varying requirements in educational institutions of different countries. According to our teaching experience, weakening vocabulary memorization requirements leads to the accumulated unlearned material and subsequent comprehension problems in the course of “Latin Language and Fundamentals of Medical Terminology” discipline.

From our view point, the “Latin adjective system”, studied in the first section of the discipline, is the most difficult for international students. The lack of a case system and grammatical gender in English makes it difficult for students to understand noun-adjective agreement rules. In English, adjectives always precede nouns, whereas in Latin, they always follow nouns, which greatly confuses international students. An international student thus requires more time and effort to master adequate algorithms for translating grammar structures and building a medical terminology vocabulary in his memory. In this case, material presentation in tables and diagrams somewhat simplifies training material comprehension.

English-speaking students often struggle with a term semantic meaning which is essentially a Latin word without an ending. A.G. Gaifullina's research (Gaifullina, 2006) notes that the Latin adjective *sphenoidalis*,e (“sphenoid”) is clear to Russian-speaking students due to their familiarity with the concept of a “wedge”, but international students may not understand *sphenoid* without the translation “wedge” — “wedge-shaped form”. The author believes that a simple transliteration of a Latin term, without object explanation or its description by common English, does not promote understanding of the anatomical-histological object and its functions []. In NSMU, this problem is partially addressed by demonstrating slides with images of anatomical structures that are difficult to understand, as well as basic dictionary with detailed explanations in English. Latin teachers working in groups of international students often have to explain terms using both medical English and anatomy, requiring knowledge of the human body structures, a significant number of synonyms and words close in meaning.

Teaching Latin to international students shows that they don't have significant difficulties with CLINICAL TERMINOLOGY (section 2 of the course). It's due to the fact that medical terms in English often share roots with Latin terms, largely coinciding in their pronunciation and spelling. The clinical terminology study does not require constant use of grammar concepts. Students need to memorize Greek-Latin word-building elements that underlie the formation of medical terms. Clinical terminology deals with a variety of processes and phenomena related to disease prevention, diagnosis, differentiation, examination methods, and patient treatment, which strongly motivates international students to study it. The teacher's task is to help students understand the structure of terms and their components. It is largely helped by numerous practice exercises in determining term general meaning and constructing clinical terms by term elements.

Terminology training for future doctors involves not only understanding terminology but practical skills in its active use as well. Analyzing terms from clinical cases is very helpful in Latin practical classes. Below is one of the case examples with clinical terms to be explained. “67-year-old patient was admitted with *abdominal* syndrome of unclear *etiology*. Lab results: *leukocytosis*, *hematuria*, *pyuria*. X-ray: left-sided *nephroptosis*, *hepatomegaly*”. Being a certain way of overcoming difficulties in professional communication, such tasks are of the greatest interest to international students. The situation is somewhat complicated when students lack sufficient English proficiency. In such cases, the teacher has to spend more time explaining a particular term.

PHARMACEUTICAL TERMINOLOGY (section 3 of the discipline) is the most difficult for international students. They study drug nomenclature used in the pharmaceutical market, learn to identify common stems within drug names that carry certain information about the medicine and acquire prescription writing skills.

Difficulties arise when explaining a number of dosage forms (liniments, decoctions, infusions and tinctures), previously unknown to international students. The same is true with plant names used in prescriptions (hawthorn, plantain, etc.).

Some international students misunderstand the prescription concept and the need to study its structure in Latin. It is due to the fact that in many countries students come from, prescriptions are written in English or the national language.

There is a problem with the use of capital and small letters in Latin pharmaceutical terms and prescriptions, as many students come from regions where the writing system lacks uppercase letters. Indian students also face similar difficulties and the teacher has to constantly emphasize the use of capital letters in prescription writing.

Turning to our survey findings, one can say that anatomical terminology is the most interesting section of the Latin course for the majority of international students. Given that Latin is studied alongside the human anatomy course, it is to be quite expected. According to students, knowledge of Latin makes Anatomy study easier and more interesting.

International students also show interest in the clinical section of the discipline. It is not surprising, as disease names and pathological processes are must-have elements in medical practice.

From the view point of international students, the acquired skills in interpreting diagnoses and understanding human body systems are among the positive aspects in the study of “Latin Language and Fundamentals of Medical Terminology” discipline.

All international students believe the difficulties in studying the discipline to be related to the linguistic features of Latin (case system, declensions, etc.).

According to the survey findings, the “Pharmaceutical Terminology” section is the most difficult.

Students note differences in teaching methods between Russia and abroad as an organizational aspect, requiring adaptation time.

As measures to improve the educational process, international students suggest using workbooks, as it is the most familiar type of classroom activity for them. International students enjoy competitive tasks, vocabulary games, and solving terminology crosswords for speed. All of these are seen by students as methods to encourage more effective discipline study.

Conclusion

Learning Latin contributes to the formation of international language of medicine and is a kind of means of adapting international students to the medical profession.

Teaching Latin in heterogeneous, multi-level, multinational students' groups with instruction in a lingua franca is quite challenging. The teacher has to cover a large amount of material in a relatively short time. At the same time, the course should be adapted to address all the objective and subjective difficulties that international students have in the process of perceiving, memorizing and reproducing the information studied.

Teachers face the varying language proficiency levels of international students that complicates the explanation of a new foreign language (Latin) in another one (English).

Linguistic aspects related to the difference in the system of Latin and English and the interfering influence of the latter are another challenge for Latin teachers working with international students.

In the process of teaching “Latin Language and Fundamentals of Medical Terminology” discipline, the teacher must be able to clearly and competently explain the terms from the view point of both medical English and anatomy, necessitating knowledge of the human body structures, a significant number of synonyms and words close in meaning.

Many difficulties arising in the process of teaching this discipline are removed when using visualization elements, workbooks and dictionaries, which facilitate an informed and conscious approach to learning the material.

References

- Angel, A.V., & Volkova, E.A. (2020). The Role of Intermediary Language at the Lessons of Russian as a Foreign Language in the Context of a Present-Day University. *Prepodavatel' XXI vek*, (1), 159–167. (In Russ.) <https://doi.org/10.31862/2073-9613-2020-1-159-167>
- Gaifullina, A.G. (2006). English as an Intermediary Language in Teaching Latin Medical Terminology. In K.R. Galiullin & G.A. Nikolaev (Eds.), *III International Baudouin Readings: I.A. Baudouin de Courtenay and Modern Problems of Theoretical and Applied Linguistics*. Kazan, May 23–25, 2006 (vol. 2, pp. 144–146). Kazan: Kazanskiy (Privolzhskiy) federal'nyy universitet. (In Russ.)
- Goncharenko, N.V., Altuhova, O.N., & Ignatenko, O.P. (2016). Teaching Foreign Medical Students in an Intermediary Language as an Innovative Method in Teaching Russian. *Filologicheskie nauki. Voprosy teorii i praktiki*, (8-1), 181–183. (In Russ.)
- Khokhlova, L.A., Andreeva, E.A., Kiseleva, L.G., Tikhonova, E.V., & Andreeva, A.S. (2022). Russian Medical Education from International Students' View Point: Challenges and Coping Strategies. *Russian Journal of Education and Psychology*, 13(5), 82–98. <https://doi.org/10.12731/2658-4034-2022-13-5-82-98>
- Khokhlova, L.A., Dynkov, S.M., Kiseleva, L.G., Tikhonova, E.V., & Kolodkina, O.F. (2018). Problems of teaching academic disciplines to foreign students at the Northern State Medical University. *Sovremennye issledovaniya social'nyh problem*, 9(11), 6–14. <https://doi.org/10.12731/2218-7405-2018-11-6-14>
- Kostromina, T.A., & Stepashov, N.S. (2007). *Sociocultural Foundations of Bilingual Communicative Difficulties*. Kursk: KGMU. (In Russ.)
- Macaro, E., Curle, S., Pun, J., An, J., & Dearden, J. (2020). A systematic review of English medium instruction in higher education. *Language Teaching*, 51(1), 36–76. <https://doi.org/10.1017/S0261444817000350>
- Markova, N.I. (2015). Latin as a Discipline Providing Interdisciplinary Integration. In *Language of Medicine: International Interuniversity Collection of Scientific Papers in Honor of the Anniversary of V.F. Novodranova* (pp. 243–247). Samara: KRYPTEN-Volga. (In Russ.)
- Melezhik, K.A. (2016). Language policy and linguistic reality of university community internationalization. *Politicheskaya lingvistika*, (1), 151–158 (In Russ.)
- Myachina, D.S., Deryaeva, O.G., Deryaeva, A.G., & Kozhevnikov, V.V. (2020). Teaching clinical disciplines to foreign students: bilingual training in medical universities. *International Journal of Humanities and Natural Sciences*, (7-3), 18–21. <https://doi.org/10.24411/2500-1000-2020-10801>
- Shatalova-Davydova, D.A. (2019). International Students as Part of the New Educational System in Russia. *Molodoj uchenyj*, (2), 381–383. Retrieved from <https://moluch.ru/archive/240/55472/> (In Russ.)
- Shleynikova, E.E., Dementyeva, A.A., Makarova, T.G., & Mogileva, I.I. (2024). Training in the intermediary language in medical universities of Russia: a comprehensive approach to developing Foreign Students' Communicative Competence. *Vestnik Cherepoveckogo gosudarstvennogo universiteta*, (6), 218–228. (In Russ.) <https://doi.org/10.23859/1994-0637-2024-6-123-20>
- Stobbe, I.A., & Azarova, O.V. (2023). University Lecture: Teaching Chemistry to Foreign Students. *Razvitie obrazovaniya*, 6(2), 63–70. (In Russ.) <https://doi.org/10.31483/r-106252>
-

Zherlitsyna, O.A., Lebedeva, Yu.V., & Safina, E.V. (2022). Peculiarities of education of foreign students at russian universities: problems and difficulties. *Nauka. Iskusstvo. Kul'tura*, (1), 193–198. (In Russ.)

Литература

- Ангел А.В., Волкова Е.А. Роль языка-посредника на уроках русского языка как иностранного в условиях современного вуза // *Преподаватель XXI век*. 2020. № 1. С. 159–167. <https://doi.org/10.31862/2073-9613-2020-1-159-167>
- Гайфуллина А.Г. Английский язык в качестве языка-посредника при обучении латинской медицинской терминологии // *III Международные Бодуэновские чтения: И.А. Бодуэн де Куртенэ и современные проблемы теоретического и прикладного языкознания*. Казань, 23–25 мая 2006 года. Под общ. ред. К.Р. Галиуллина, Г.А. Николаева. Том 2. Казань: Казанский (Приволжский) федеральный университет, 2006. С. 144–146.
- Гончаренко Н.В., Алтухова О.Н., Игнатенко О.П. Обучение иностранных студентов-медиков на языке-посреднике как инновационный метод в преподавании русского языка // *Филологические науки. Вопросы теории и практики*. 2016. № 8-1 (62). С. 181–183.
- Жерлицына О.А., Лебедева Ю.В., Сафина Е.В. Особенности обучения иностранных студентов в российском университете: проблемы и трудности // *Наука. Искусство. Культура*. 2022. № 1 (33). С. 193–198.
- Костромина Т.А., Степашов Н.С. Социокультурная детерминация билингвальных коммуникативных затруднений. Курск: КГМУ, 2007. 175 с.
- Маркова Н.И. Латинский язык как дисциплина, обеспечивающая междисциплинарную интеграцию // *Язык медицины: международный межвузовский сборник научных трудов в честь юбилея В.Ф. Новодрановой*. Самара: KRYPTEN-Волга, 2015. С. 243–247.
- Мележик К.А. Языковая политика и языковая реальность интернационализации университетского сообщества // *Политическая лингвистика*. 2016. № 1 (55). С. 151–158.
- Шаталова-Давыдова Д.А. Иностранные студенты как часть новой образовательной системы в России // *Молодой ученый*. 2019. № 2. С. 381–383. URL: <https://moluch.ru/archive/240/55472/> (дата обращения: 20.08.2025).
- Шлейникова Е.Е., Дементьева А.А., Макарова Т.Г., Могилева И.И. Обучение на языке-посреднике в медицинских вузах России: комплексный подход к формированию коммуникативной компетенции иностранных студентов (из опыта работы СПбГПМУ) // *Вестник Череповецкого государственного университета*. 2024. № 6 (123). С. 218–228. <https://doi.org/10.23859/1994-0637-2024-6-123-20>
- Штоббе И.А., Аарова О.В. Вузовская лекция: опыт преподавания химии иностранным студентам // *Развитие образования*. 2023. Том 6. № 2. С. 63–70. <https://doi.org/10.31483/r-106252>
- Khokhlova L.A., Andreeva E.A., Kiseleva L.G., Tikhonova E.V., Andreeva A.S. Russian Medical Education from International Students' View Point: Challenges and Coping Strategies // *Russian Journal of Education and Psychology*. 2022. Том 13. № 5. С. 82–98. <https://doi.org/10.12731/2658-4034-2022-13-5-82-98>
- Khokhlova L.A., Dynkov S.M., Kiseleva L.G., Tikhonova E.V., Kolodkina O.F. Problems of teaching academic disciplines to foreign students at the Northern State Medical University // *Современные исследования социальных проблем*. Том 9. № 11. С. 6–14. <https://doi.org/10.12731/2218-7405-2018-11-6-14>
- Macaro E., Curle S., Pun J., An J., Dearden J. A systematic review of English medium instruction in higher education // *Language Teaching*. 2020. Vol. 51. No. 1. Pp. 36–76. <https://doi.org/10.1017/S0261444817000350>
- Myachina D.S., Deryaeva O.G., Deryaeva A.G., Kozhevnikov V.V. Teaching clinical disciplines to foreign students: bilingual training in medical universities // *International Journal of Humanities and Natural Sciences*. 2020. No. 7–3 (46). Pp. 18–21. <https://doi.org/10.24411/2500-1000-2020-10801>
-

Информация об авторе

Хохлова Лариса Александровна, доктор психологических наук, Северный государственный медицинский университет; почтовый адрес: Россия, 163069, г. Архангельск, Троицкий пр-т, д. 51; электронная почта: nsmu.lkhokhlova@yandex.ru

Заявление о конфликте интересов

Автор заявляет об отсутствии конфликта интересов.

История статьи

Поступила в редакцию 3.07.25. Принята к печати 20.07.25.

Information about the author

Larissa A. Khokhlova, Doctor of Psychological Sciences, Northern State Medical University; Postal Address: Russia, 163069, Arkhangelsk, 51, Troitskiy Prospekt; e-mail: nsmu.lkhokhlova@yandex.ru

Conflicts of interest

The author declares no conflicts of interests.

Article history

Received 3 July 2025. Accepted 20 July 2025.