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Navigating the complex landscape of neurology education

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ABSTRACT

A survey was conducted among foreign students at Bashkir Medical University to understand their experiences in learning Neurology using the English language in Ufa, Russia. Twelve participants answered our questions and gave their feedback about their difficulties and ways to overcome them.

Keywords: studying Neurology, foreign students, education in Russia

INTRODUCTION

The field of neurology is a fascinating and intricate branch of medicine, unraveling the mysteries of the human brain and its myriad functions. As our understanding of the nervous system continues to evolve, so too does the complexity of neurology education. Medical students, who embark on the journey of mastering this intricate discipline, often encounter numerous challenges and hurdles along the way.

Purpose of the research

To gain valuable insights into these challenges, as well as the methods and tools employed by students in their quest to conquer neurology, we embarked on a comprehensive survey aimed at understanding the experiences of foreign medical students of Bashkir state medical university.

MATERIAL AND METHODS

This paper presents the results of a meticulously designed survey that delves deep into the experiences of medical students grappling with neurology education. We have conducted a statistical analysis of the data gathered from a diverse group of students, allowing us to identify the most prevalent challenges faced by these individuals and the methods and tools they find most effective in their learning journey. By quantifying these challenges and their respective percentages, we aim to provide valuable insights that can inform educators, curriculum designers, and students themselves on how to optimize neurology education.

Study Design

This study employed a pilot cross-sectional survey design to assess the challenges and strategies used in learning neurology among a diverse group of foreign students enrolled at Bashkir State Medical University in Ufa, Russia.

Participants

The study's participants consisted of 12 foreign students pursuing medical degrees at Bashkir State Medical University. The inclusion criteria were the current enrollment as a medical student at Bashkir State Medical University, being a person from a country outside of Russia, and informed consent to participate in the study

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Participants were recruited through email invitations, university announcements, and social media platforms, ensuring a diverse representation of students from various nationalities.

Survey Instrument

A structured questionnaire was designed specifically for this study. The survey consisted of two main sections:

1. Demographic Information: This section collected information on participants' age, gender, nationality, academic year, and prior educational background.

2. Neurology Education: This section focused on assessing the challenges encountered during neurology education and the methods and tools employed to address these challenges.

Data Collection

The survey was distributed electronically to potential participants via email and university communication channels. Participation was voluntary, and respondents were assured of the confidentiality and anonymity of their responses. Data collection was conducted over a specified period to ensure a sufficient sample size.

RESULTS

The survey of 12 medical students at Bashkir State Medical University provides a multifaceted view of their experiences with neurology education.

1. Neurology Final Examination Marks

In terms of their performance in the neurology final examination: 50% of participants achieved a commendable score of 4 out of 5. 25% secured a respectable score of 3 out of 5. A quarter of the participants excelled with a perfect score of 5 out of 5.

2. Specific Challenges Encountered in Learning Neurology

Participants identified specific challenges they faced during their neurology studies: A majority (58.2%) experienced difficulties in memorizing information. Among them, 33.3% struggled with memorizing symptoms and diseases, 16.6% grappled with neuroanatomy, and 8.3% found neuropsychiatric aspects challenging. Roughly one-third (33.3%) encountered problems related to practical skills and diagnosis. A minority (8.3%) found neurology as a whole to be a demanding subject.

3. Most Helpful Resources During Study

Participants disclosed their preferred study resources: More than half (54.54%) relied on educational videos. A smaller fraction (13.63%) turned to English textbooks. About a third (31.81%) used textbooks in their native language.

4. Concepts Difficult to Grasp

Participants highlighted concepts they found challenging in neurology: A significant portion (33.33%) struggled with neuroanatomy and pathways; 15.66% found it challenging to grasp lesions and symptoms. A quarter (25%) did not specify particular difficulties; 8.33% faced challenges with practical skills and tests. An equal percentage (8.33%) encountered hurdles in understanding pharmacotherapy and medications, as well as diseases in general.

5. Effective Study Methods and Techniques

Participants shared their effective study methods: A majority (55.55%) found videos to be a highly effective study tool; 11.11% utilized charts. Nearly a third (27.77%) engaged in discussions and repetitions. A smaller fraction (5.55%) opted for traditional reading of textbooks and atlases.

6. Participation in Discussion Groups and Peer Discussions

Regarding participation in discussion groups and peer discussions: A majority (58.33%) did not participate in such activities. Conversely, 41.66% actively engaged in discussion groups.

7. Innovative Techs and Tools

Participants' use of innovative technologies and tools included: 18.18% utilized educational apps; 27.27% did not employ any innovative tools; 36.36% harnessed the power of videos and YouTube for learning; 9.09% explored medical websites such as Medscape. Another 9.09% made use of simulators.

8. Knowledge Assessment Methods

Participants' approaches to assessing their knowledge included: A substantial portion (45.45%) did not employ any specific assessment method; 18.18% relied on class marks. The majority (36.36%) assessed their knowledge based on the quality of their memory.

9. Time Management Techniques

In terms of time management techniques: A majority (58.33%) did not use any structured time management methods; 33.33% employed reviewing at various intervals. A small fraction (8.33%) practiced time boxing techniques.

DISCUSSION

The findings from our survey of medical students at Bashkir State Medical University offer a nuanced under-

standing of the challenges they encounter during their neurology education, the resources they rely on, and the strategies they employ to navigate this complex field. In this discussion, we delve into the implications of these results and consider their significance for both educators and students.

1. Academic Performance and Challenges

The fact that half of the participants scored 4 out of 5 or higher in their neurology final examination is encouraging. This suggests that a substantial portion of the student body can grasp and apply neurology concepts effectively. However, it is essential to address the challenges faced by the remaining students. The most cited challenge was memorization, with over half of the participants struggling in this area. This aligns with the nature of medical education, which often demands extensive memorization of complex information. Notably, a significant portion of those facing this challenge specifically had difficulty memorizing symptoms and diseases. This underscores the need for innovative pedagogical approaches that facilitate more effective memorization techniques, such as mnemonics and spaced repetition. Neuroanatomy emerged as another area of concern, indicating that it remains a formidable obstacle in neurology education. This calls for enhanced teaching methodologies and resources to aid students in comprehending the intricacies of the nervous system's structure and pathways.

2. Preferred Resources and Learning Strategies

Students predominantly relied on educational videos as their primary resource for studying neurology. This underscores the increasing importance of multimedia content in medical education. Educators should recognize this trend and consider incorporating more video-based learning materials into their curricula. The use of textbooks in both English and students' native languages suggests the importance of accessibility to diverse learning resources. Institutions should strive to provide a variety of study materials to cater to students with varying language preferences and proficiencies. The reported difficulties in grasping neuroanatomy and pathways, lesions and symptoms, practical skills, pharmacotherapy, and diseases in general highlight areas that may require focused attention. Collaborative problem-solving approaches, interactive learning, and case-based scenarios can be effective strategies to enhance understanding in these domains.

3. Peer Engagement and Innovative Tools

A significant proportion of students did not participate in discussion groups or peer discussions during their neurology studies. This may indicate a potential missed opportunity for collaborative learning, as engaging with peers can provide diverse perspectives and facilitate deeper understanding.

The use of innovative tools such as educational apps, videos, and medical websites are promising. However, there is room for expanding the utilization of these resources, especially considering that some students did not employ any innovative tools. Encouraging the adoption of technology-enhanced learning should be a priority for educational institutions.

4. Knowledge Assessment and Time Management

The varied approaches to knowledge assessment reflect the individualized nature of learning preferences. Educators should consider providing multiple assessment methods to accommodate diverse learning styles. Many students reported not using time management techniques. This could be an area where institutions can offer guidance and resources to help students optimize their study schedules and improve overall time management skills.

5. Enhancing Memorization Techniques

The issue of memorization, which was highlighted as a major challenge by most respondents, deserves special attention. Effective memorization is crucial in medicine, where knowledge retention directly impacts patient care. Educators can explore and implement memory-enhancing techniques, such as spaced repetition, concept mapping, and active recall, to help students overcome this obstacle. Additionally, integrating real-life clinical scenarios and case studies into the curriculum can facilitate the application of memorized information in practical settings, reinforcing retention.

6. Interactive Learning and Active Engagement

Neuroanatomy, lesions, symptoms, and practical skills were identified as challenging areas in neurology education. To address these difficulties, educators can adopt interactive learning methods. Incorporating problem-based learning, simulations, and hands-on laboratory experiences can provide students with a deeper understanding of complex concepts and practical skills. Encouraging active engagement through discussions, group projects, and peer teaching can foster critical thinking and collaborative problem-solving.

7. Fostering Peer Engagement

The survey revealed that a substantial portion of students did not participate in discussion groups or peer

discussions. Encouraging peer collaboration can enhance learning outcomes. Institutions can facilitate peer-led study groups, create online discussion forums, or establish mentorship programs where more experienced students guide their peers. Such initiatives not only promote knowledge sharing but also create a supportive learning community.

8. Harnessing Technology-Enhanced Learning

The reliance on videos, educational apps, and online resources underscores the increasing role of technology in medical education. Educational institutions should continue to invest in and promote the use of technology-enhanced learning environments. Providing access to high-quality digital resources, virtual patient simulations, and interactive e-learning platforms can make neurology education more engaging and effective.

9. Customizing Support and Resources

Recognizing that students have varied language proficiencies and learning styles, institutions should strive to provide a range of resources tailored to individual needs. This includes offering neurology textbooks in multiple languages and creating adaptive learning pathways that accommodate different learning preferences. Personalized support and mentorship programs can also be valuable in helping students overcome their unique challenges.

CONCLUSION

In the realm of neurology education, the journey of medical students is a dynamic interplay between challenges, resources, and strategies. This survey, conducted among students at Bashkir State Medical University, has illuminated several key facets of this journey, shedding light on both the obstacles faced and the pathways to success.

Our findings underscore that while a significant proportion of students excel in neurology studies, many encount formidable challenges, primarily in the realms of memorization and understanding complex concepts like neuroanatomy and practical skills.

These challenges call for a reevaluation of pedagogical approaches and the provision of tailored support Mechanisms. The prevalence of educational videos as a primary resource for learning highlights the evolving landscape of medical education, where multimedia content plays an increasingly vital role. Educators should adapt by incorporating more interactive and video-based materials into their Curricula. Furthermore, the importance of peer engagement cannot be overstated. Encouraging collaboration among students through discussion groups and peer-led initiatives can foster a sense of community and enhance knowledge Sharing. Embracing technology-enhanced learning, including apps, videos, and online resources, is a promising trend. Institutions should continue to invest in these tools to create more engaging and accessible learning environments. We compared the difficulties in studying neurology in our Russian sample and in West Kazakhstan and found many things in common [1].

As medical education strives for inclusivity, institutions must cater to students with diverse language proficiencies and learning styles. Customizing resources and providing personalized support can help address the unique needs of each learner.

Ethical Considerations

Informed consent was obtained from all participants before they completed the survey. Participants were assured that their responses would remain confidential and that their participation was entirely voluntary. No conflict of interest is declared since all the participants already passed the Neurology exam. We did not use any financial support for this study. The research described here is a component of the frame All-Russia program “Priority 2030”.

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