Medicinska istaživanja 2024; 57(1):107-114 | DOI: 10.5937/medi57-46188

OPEN ACCESS

Medical Research | Published by Faculty of Medicine University of Belgrade

ORIGINAL ARTICLE

Attitudes and opinions of first year medical students regarding peer-assisted learning of histology and embriology: the role of undergraduate teaching assistents

Miloš Bajčetić[1], Ana Pešikan[2], Katarina Milutinović[1], Ana Ilijevski[1], Aleksa Leković[3], Jelena Rakočević[1], ✉ Ivan Zaletel[1]

[1]University of Belgrade, Faculty of Medicine, Institute of Histology and Embryology "Aleksandar Đ. Kostić", Belgrade, Serbia

[2]University of Belgrade, Faculty of Philosophy, Department of Psychology, Belgrade, Serbia

[3]University of Belgrade, Faculty of Medicine, Institute of Forensic Medicine, Belgrade, Serbia

Recived: 28 August 2023

Revised: 04 December 2023

Accepted: 27 February 2024

Check for updates

Funding information:
There is no funding information to report for this grant.

Competing interests:
The authors have declared that no competing interests exist

✉ **Correspondence to:**
Ivan Zaletel

Institute of Histology and Embryology "Aleksandar Đ. Kostić"

26, Višegradska Street, 11000 Belgrade, Serbia

Email: ivan.zaletel@med.bg.ac.rs

Summary

Peer-assisted learning (PAL) is a form of teaching method where students facilitate the transfer of knowledge to other students and at the same time learn themselves. Department of Histology and Embryology at the Faculty of Medicine, University of Belgrade, Serbia has a longstanding tradition of PAL, which involves the use of undergraduate teaching assistants (UTAs) in practical microscopy classes. This research aimed to evaluate the attitudes and opinions towards UTAs work during Histology and Embryology course from the perspective of 1st year students. Data from this study were collected from 512 undergraduate medical students enrolled in the 1st study year using an anonymous semi-structured questionnaire. The analysis of the students' responses has shown that almost all of our students asked for the help of UTAs during Histology and Embryology course. Additionally, 65% of students said that they felt more comfortable asking UTAs for help during their labs than faculty teachers. Most students believe that UTAs devoted sufficient time to them during the practical classes. Nearly 90% of students agreed that UTAs gave them good advice and answers and more than 80% of students perceived that they had never received inaccurate information from UTAs. More than 40% of students can see themselves in the role of UTAs in future. These results indicate that UTAs have a significant place in the Histology and Embryology curriculum and that their role in everyday teaching represents one of the most important aspects of PAL.

Keywords: peer-assisted learning, medical education, teaching, curriculum

Cite this article as: Bajčetić M, Pešikan A, Milutinović K, Ilijevski A, Leković A, Rakočević J, Zaletel I. Attitudes and opinions of first year medical students regarding peer-assisted learning of histology and embriology: the role of undergraduate teaching assistents; Medicinska istraživanja 2024; 57(1):107-114 10.5937/medi57-46188

INTRODUCTION

Peer-assisted learning (PAL) is a well-established teaching method where non-professional teachers, such as students, facilitate the acquisition of knowledge by other students, helping them to master the educational material and at the same time learn themselves, thus undertaking an active role in the process of teaching (1, 2, 3). This form of education has found its application in all levels of education, but nowadays it is most dominant in the field of higher education, especially in medicine, where it has found its educational place in numerous preclinical (4-9), as well as clinical subjects (10-12).

Different forms of PAL can be classified according to its three main components – educational distance, group size and formality (13, 14) – distance being the main factor that distinguishes these educational programs (15). When referring to the difference in educational distance, the term peer tutoring refers to the relationship in which student-teachers and student-learners are in the same academic year, while the term near-peer is used for the relationship where the difference between student-teachers and student-students is at least one academic year (14-16). One of the main forms of near-peer teaching at faculties is implemented using undergraduate teaching assistants (UTAs) (17). Various roles and responsibilities of UTAs have been described in literature (3, 18), as well as their positive benefits to student-learners and themselves in the fields of biomedical sciences (3, 5, 17, 19 - 21).

At the Department of Histology and Embryology, Faculty of Medicine, University of Belgrade, Republic of Serbia, there has been almost a century-long tradition of actively engaging UTAs in practical microscopy classes. Their task is to help 1st year students recognize and analyze histological slides, as well as draw and label given samples and help them with the course material. UTAs at our department are preselected from students who have successfully passed the Histology and Embryology exam with high marks (9/10 or 10/10) and are at least at the 2nd year of their medical studies. Additionally, these students are interviewed by department members to assess their competence and interest in being UTAs. Although throughout the previous decades we have seen many positive effects of UTAs on our 1st year students and Histology and Embryology teaching in general, we haven't had the opportunity to inspect the attitudes and opinions of 1st year students about the UTAs work so far. Therefore, this research aimed to evaluate the quality of work of UTAs at the Department of Histology and Embryology from the perspective of 1st year students and to look into their attitudes and opinions towards this form of near-peer education program.

MATERIAL AND METHODS

Histology and Embryology course

Histology and Embryology is a mandatory, two-semester subject for 1st year medical students at the Faculty of Medicine, University of Belgrade, Republic of Serbia. The course takes 30 weeks, and it is organized into lectures, practical classes (microscopy labs), and seminars or online (blended) activities. Students can choose to have traditional computer classroom seminars, or they can be enrolled in an online course of Histology and Embryology entitled "Reticulum", based on Moodle Learning Management System (LMS). For a detailed description of the Histology and Embryology course at the 1st year of medical studies and the structure and organization of the curriculum at the Faculty of Medicine, University of Belgrade, the readers are referred to our previous paper (25).

Subjects

The present study included a total of 512 undergraduate medical students enrolled in the 1st year of the Faculty of Medicine, University of Belgrade. The survey was done at the end of the second semester and during the final week of microscopy labs in Histology and Embryology, at our department. The study aims were introduced to the participants and each of the students gave their consent to voluntarily and anonymously participate in the survey. The present study was also done as a part of the quality assurance and quality improvement program at the Department of Histology and Embryology, Faculty of Medicine, University of Belgrade.

Instrument

Data from this study were collected using an anonymous digitally semi-structured questionnaire. The questionnaire was comprised of questions regarding demographic characteristics, such as gender, and previous education, as well as the questions and assertions concerning the student's attitudes towards the quality of work of UTAs. The study results are shown in the form of descriptive statistics (frequencies, percentages). One question was in the form of assertion which was rated on a 5-point Likert scale, where answer 1 denoted the attitude "I completely disagree" and answer 5 denoted the attitude "I strongly agree" with the given statement. These results were later dichotomized so that the answers ranked 4 or 5 on the Likert scale were classified as a positive attitude or "agreement" and answers ranked 3, 2, and 1 on the Likert scale were classified as a negative attitude or "disagreement". Additionally, the questionnaire included two open questions, where students were able to express their opinions on what characteristics and virtues make good UTAs and why some of them would like to become UTAs in future.

RESULTS

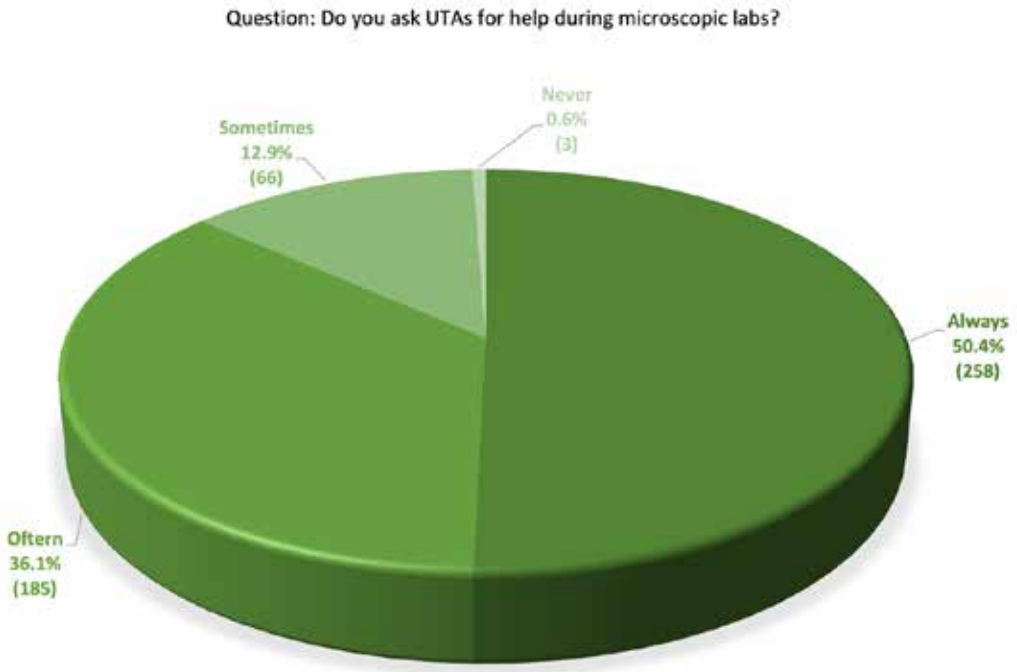
A total of 512 1st year medical students (151 male and 361 female students) participated in the study and completed the semi-structured questionnaire. Most of the students had previous high school (313/512, 61.1%) or secondary medical school education (182/512, 35.5%), while only 3.3% (17/512) students have completed some other type of secondary school.

The Histology and Embryology course has 27 practical microscopy classes during two semesters (13 in the first semester and 14 in the second semester). For UTAs to fulfill their teaching obligations, they must be present in at least 11 microscopy labs during one semester, which is cumulatively about 80% of the total practical classes during the course. When students were asked whether the UTAs regularly attended their microscopy labs, most students responded positively (455/512, 88.9%), while 11.11% (57/512) students reported that UTAs occasionally appeared in their classes. None of the students have responded that UTAs did not attend microscopy labs.

The main role of UTAs in the Histology and Embryology course is to help and teach 1st year students how to properly use a microscope, find adequate elements in histological slides, as well as to help them draw and label those structures in their workbooks. Almost 90% of our students have, to some extent, asked for the help of UTAs during the Histology and Embryology course and less than 1% (3/512) of students have never asked for UTAs help **(Figure 1)**. Additionally, 65% of students (334/512) have said that they felt more comfortable asking UTAs for help during their practical courses than asking faculty teachers (teaching assistants, assistant professors, and associate professors). Only one student (0.2%) has responded negatively about asking both from faculty teachers and UTAs for assistance. We were also interested in seeing which segment of microscopy labs UTAs were most helpful with. The student's answers show that UTAs have a very important role not just in microscopy, analyzing, drawing, and labeling of specimens and structures, but also students turn to UTAs when they have questions concerning the Histology and Embryology teaching material **(Table 1)**.

Most of the student respondents (78.5%, 402/512) believe that UTAs devoted sufficient time to each of them during practical classes. However, a fifth of students (20.5%, 105/512) state that UTAs did this sporadically, while only 5 students (1%) have claimed that UTAs never devoted enough time to them. 1st year medical students have also expressed their thoughts on the quality of answers and advice given by the UTAs in the form of the following statement: *UTAs gave me good advice and provided answers to my questions concerning Histology and Embryology teaching material*. Almost 90% (455/512) of students agreed with the abovementioned assertion, while only 11% (57/512) of students showed some degree of disagreement **(Figure 2)**.

Since UTAs at our Faculty can be students from 2nd to 6th year of study who have successfully passed Histology and Embryology exam, one should be aware that they are nonetheless still undergraduate students and that their knowledge may vary and sometimes be even incorrect. For this reason, we aimed to check if the 1st year students ever had a perception that UTAs gave them false information and if it was so, to what extent. Our analysis has shown that more than 80% (407/504) of students claimed that they had never received inaccurate information



Graph 1. Students' responses to the question if they needed help from the undergraduate teaching assistrants during microscopy classes of Histology and Embriology

about the Histology and Embryology teaching course material. Although this is the majority of students there is a significant number of students (17.5%, 88/504) who have stated that UTAs sometimes gave false or inaccurate information, and this percentage should not be neglected.

Table 1. Students' responses to the question for what reason they asked undergraduate teaching assistants for help during microscopic classes of Histology and Embryology.

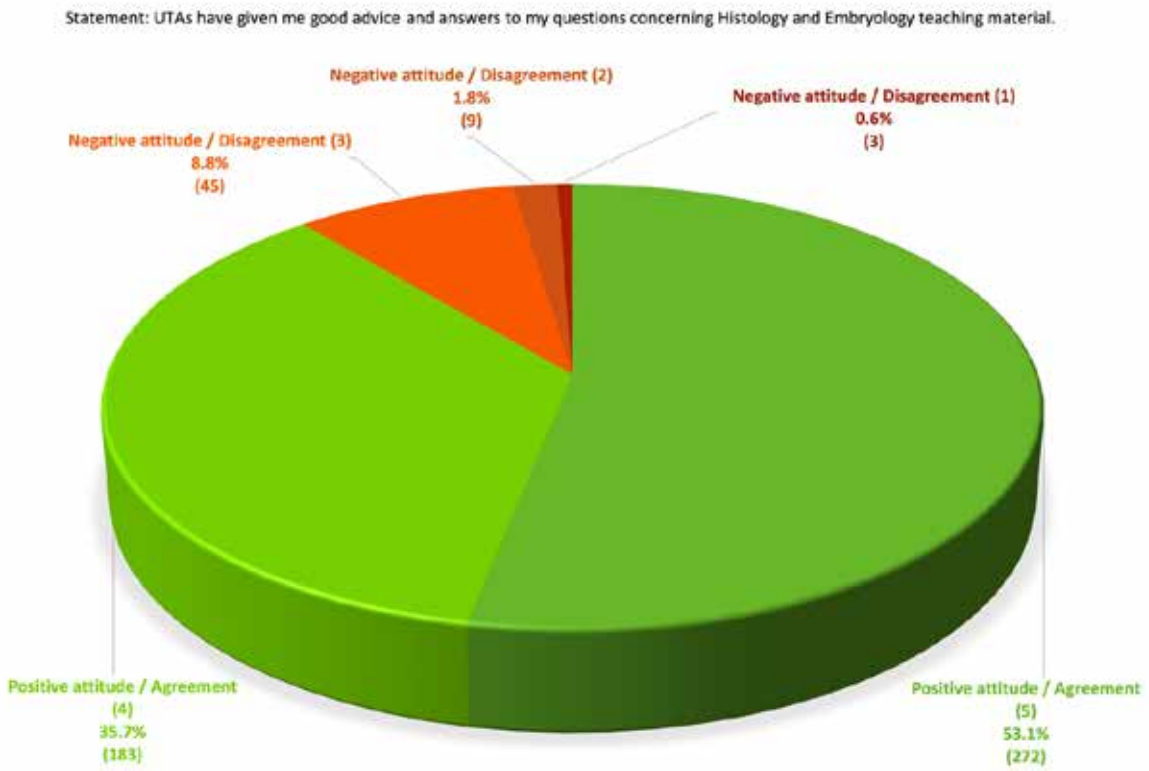
For what reasons do you ask UTAs for help during microscopic labs?	Np/Ntot (%)
I ask for assistance with microscopy and drawing of histological slides.	146/512 (28.5%)
I ask for assistance with microscopy and drawing of histological slides, but also with Histology and Embryology teaching material.	338/512 (66%)
Whenever I ask for help I always have a question concerning Histology and Embryology teaching material.	25/512 (4.9%)
I never ask questions.	3/512 (0.6%)

An interesting result arises as a response to the question in which 1st year students have been asked if they see themselves in the role of UTAs in future. Although a large percentage of students gave a positive answer to this question (42.6%, 218/512), there was a significant number of students who gave a negative answer (31.1%, 159/512) and students who did not have a clearly defined attitude towards this question (26.4%, 135/512). In the final question, students had the possibility to give an open answer as to which personal qualities and characteristics described a good UTA. In **Table 2** we have listed some of the most interesting and striking comments given by our students.

DISCUSSION

When trying to classify the form of PAL present in the Histology and Embryology course at our faculty, and according to the categories proposed by Olaussen et al. (15), we could say that it predominantly belongs to the near-peer tutorial form. The near-peer form of PAL implies that there is a difference of at least one academic year between students, as it is the case between our 1st year students and UTAs (13). Additionally, we can further classify this form of near-peer teaching as near-peer tutoring, since usually one UTA is assigned to 10 students (15). However, in the past year, due to certain legislations that have been adopted by our university, the number of UTAs at our faculty significantly decreased. Thus, we can now define the current situation as near-peer didactic form, where the ratio between UTAs and students exceeds 1:10 (15). According to the environment in which peer education is conducted, our course belongs to the formal form, since it has been implemented in the official curriculum (14, 15).

Among the obtained study results, we can see that almost all our students (86.5%) have always or often asked for the help of UTAs to some extent. Interestingly, 65%



Graph 2. The percentege of students who agreed or disagreed with the given assertion. The 5-point Likert scale answers have been additionally dichotomized, so that answers ranked 4 or 5 have been considered as positive attitude (i.e., agreement) and answers ranked 1, 2 and 3 have been considered as negative attitude (i.e., disagreement)

Table 2. Students' responses to an open-ended question about what describes a good undergraduate teaching assistant

What describes a good UTA?
Having a good attitude towards students, i.e., let them know they can freely ask everything they don't know, even if those questions are related to basic things from a certain area or subject. Of course, a UTA must know the things he/she teaches, but even if they don't, they should be willing to ask other UTAs or teachers for advice and explanation. After all, nobody can know everything.
First, a UTA must have knowledge and secondly they must be able to transfer the knowledge to other students in a way that they feel relaxed and comfortable when they are given help and explanation. A UTA should not be arrogant about their knowledge.
Someone who fully understands new students and therefore knows exactly how to help them.
A good undergraduate teaching assistent is a student who is willing to help other students in the right way regarding the subject matter, and for other medical-related things, such as medical studies in general and teachers. They should have sufficient knowledge of the subject matter for which they are elected, be in a good mood, and should not scare off younger students.
Timeliness, goodwill, good attitude, and the power to transmit knowledge.
A good presentation of certain lessons with guidance on how to learn certain course materials.
Remembering to ask a student if he needs any help and then to give that student enough attention and time for adequate explanation. Trying to clarify, in the best way possible, all of the things that are unclear to students.
Always willing to help and devote enough time to everyone.

Abbreviations: UTA – undergraduate teaching assistant

of them have said they had more freedom to ask UTAs for help than their teachers. Regarding our UTAs' knowledge, most 1st year students (88.9%) replied that they were given good advice and answers, while more than 80% of them claimed that they had never received inaccurate information related to course material. These results could be explained by the theory of cognitive congruence (13, 20, 23 - 25). This theory relies on the assumption that learning process consists of upgrading the already existing prior knowledge in pupils. Additionally, it is known that student-teachers (UTAs in our case) better perceive the Vygotsky zone of proximal development, which represents a difference between what a learner can do with and without appropriate assistance (25, 26). Thus, teachers, who by default possess more knowledge than learners, can show a certain degree of cognitive incongruence, which in turn may distance the students from them (4, 20). On the other hand, due to their ability to realize the zone of proximal development, UTAs are much more cognitively congruent and share more connections with their student learners (5, 13, 14, 20, 25). Therefore, it is possible that student-learners believe that student-teachers who had a recent contact with the same teaching material and have passed the Histology and Embryology exam, may have a lot more understanding for them than the teachers who deal with the given subject matter much longer and on a higher level (20, 27).

A student who wants to be a UTA at our faculty is required to have a good grade point average and to have passed the subject they want to teach to other students with high marks. These students are chosen by faculty members of a certain department and are usually considered to be among best students in a certain subject, who possess similar knowledge, abilities, skills, and higher enthusiasm than graduate teaching assistants (18). Thus, it is not surprising that more than 80% of our 1st year students stated that they had the perception that they had never received inaccurate information from UTAs. However, we should not overlook the fact that more than 17% of students have stated that they received some form of inaccurate information from UTAs. Mistakes are present in every aspect of teaching profession, and in UTAs' work, mistakes could be even more pronounced since they are still students and learning their mistakes is present in everyday aspect of their studies. Medical students are aware that errors in medical education occur from the beginning of their studies, but the question is whether students themselves, and in our case UTAs, are aware of those mistake and wrong information they may have transferred to their student-learners (28).

Trying to evaluate additional aspects of UTAs influence, we also had an open-ended question on what described a good UTA from a student's standpoint. By analyzing the student's comments, we have been able to see the presence of another very important relation, such as social congruence, which also underlies PAL (8, 14, 15, 20). This relation draws on the importance of student-learner and student-teacher relationship, where the student-teacher is acting as a role model. In our situation, the concept relies on the fact that if UTAs have been able to overcome certain difficulties while learning Histology and Embryology, the student-learners will gain confidence that they will also be able to do so. Thus, both groups of students build a mutually rewarding and encouraging relationship, where UTAs improve their skills as educators and enhance confidence, while student-learners are stimulated to work harder and be more involved in the learning process (2, 3, 14, 20, 25, 29, 30). However, one should be aware that near-peer learning changes with the distance between learners and teachers (31). Graduation is thought to be one of the main transitions where social and cognitive incongruence become most apparent, but we now know that this happens even

sooner in the so-called transition zone, which is used to denote senior and last-year students (8).

Being a UTA means having a lot of obligations and duties, but it also brings numerous positive experiences and advantages such as development of teaching, social, communication, and leadership skills, improvement and advancement of current knowledge, and thus the level of self-confidence, as well as the feeling of enjoyment and enthusiasm as a result of being able to participate in someone's education (20, 25, 32 – 34). It seems that students can recognize these positive effects since more than 40% of them answered that they can see themselves in the role of UTAs in future. However, more than 50% of students had a negative opinion about being a UTA or did not have a clearly defined opinion. The reasons for this may be numerous, starting from a lack of interest in Histology and Embryology as a subject, indifference towards participation in the education of other students, or even unawareness of what the job of UTA is like and what the abovementioned positive effects it contains. The last is supported by 26% of students who did not have a defined opinion on whether or not to become a UTA. This highlights the need for formal development of students' teaching skills in an undergraduate curriculum since it can point out many benefits of near-peer learning to students, the principal being - teach others and become better learners (19, 20, 25). Also, both students and UTAs acquire self-confidence and collaborative skills for learning, listening, and discussing as a team (21).

A study by Pintér et al. shows a positive impact of near-peer tutors on student development in basic surgical skills training, suggesting the application of near-peer trainers' technique as cost-efficient and mutually beneficial (35). The benefits of near-peer teaching are also shown in the basic life support course, acute care skill training course, and clinical skills and simulation course (36). Thampy et al. proposed using general practitioners in training as near-peer tutors for medical students, given their eagerness to teach and learn. They also suggest that students in turn value teaching by their near peers (37). In all examples, students stated that they felt more comfortable seeking help and guidance from near-peer teachers and found them more approachable than their regular course teachers.

Our study had several limitations which should be noted, as they may have an impact on result interpretation. The main limitation lies in the distance diversity between our UTAs and 1st year medical students. As noted in the introduction section UTAs can be students who have successfully passed the Histology and Embryology exam and thus can be students from 2nd to 6th year of medical studies at the Faculty of Medicine in Belgrade. Since our 1st year students did not have the information about the UTAs' year of study, we were unable to assess the impact of distance between learners and teachers, which as we are aware, can significantly influence the quality and outcomes of PAL. The second factor is UTAs' regularity of attendance. Each year we have UTAs who do not fulfill their teaching obligations or decide to leave their position, mainly due to other faculty obligations which progressively increase with the year of study. However, according to the answers in our students, this factor did not significantly influence the study results as the majority of students (almost 90%) reported that UTAs regularly attended their microscopy labs.

CONCLUSION

The results of this study shed light on how student-learners were satisfied with the work of UTAs and it is currently the only study that has examined this form of near-peer learning method in Histology and Embryology teaching. Students' responses have shown that they feel more comfortable working and contacting UTAs for assistance and that the information provided by UTAs are correct and useful. According to our students, a good UTA should always be willing to help, devote enough time, have sufficient knowledge, and create comfortable atmosphere where student learners can feel free to ask questions. These results indicate that UTAs have a significant role in Histology and Embryology curriculum and that their role in everyday teaching represents one of the most important aspects of near-peer learning. Also, the impact that UTAs have on student-learners is a sign for us to additionally address their teaching education and to stimulate such students to further develop their teaching skills, from which both student-learners and student-teachers would benefit.

Based on the obtained results we now have two key directions in which future research on UTAs' impact on Histology and Embryology teaching in Serbia can be focused. Firstly, the effects of distance between learners and teachers should be thoroughly studied in the context of how this relationship changes with UTAs' year of study. Additionally, it would be interesting to see if the quality of work of UTAs differs if we consider the information about UTAs' Histology and Embryology education - whether their teachers were UTAs during their studies and if they had any previous pedagogic experience.

The second important direction is directly related to the number of UTAs. Shortly after the completion of this study, the university has made a decision to decrease the number of UTAs in all subjects in which they are engaged. This has led to changes in the PAL towards the near-peer didactic form of teaching. If we were to repeat this research under current conditions, it would be interesting to see if the UTAs' time devoted to 1st year students and thus the quality of their work have significantly changed.

Acknowledgments:

The authors of this manuscript would like to thank all their students who participated in the current study. The actual study has not been previously reported or published. There is no conflict of interest, copyright constraints, or industry funding to report for any of the authors. The views expressed in this article are those of the authors and do not reflect the policy or position of any institution.

References

1. Topping KJ. The effectiveness of peer tutoring in further and higher education: A typology and review of the literature. High Educ. 1996; 32: 321–345. doi: 10.1007/BF00138870.
2. Burgess A, McGregor D, Mellis C. Medical students as peer tutors: a systematic review. BMC Med Educ. 2014; 14: 115. doi: 10.1186/1472-6920-14-115.
3. Guraya SY, Abdalla ME. Determining the effectiveness of peer-assisted learning in medical education: A systematic review and meta-analysis. J Taibah Univ Med Sci. 2020 May 30;15(3):177–84.
4. Jackson TA, Evans DJR. Can medical students teach? A near-peer-led teaching program for year 1 students. Adv Physiol Educ. 2012; 36: 192–196. doi: 10.1152/advan.00035.2012.
5. Hall S, Stephens J, Andrade T, Davids J, Powell M, Border S. Perceptions of junior doctors and undergraduate medical students as anatomy teachers: Investigating distance along the near-peer teaching spectrum. Anat Sci Educ. 2014; 7: 242–247. doi: 10.1002/ase.1419.
6. Han E-R, Chung E-K, Nam K-I. Peer-Assisted Learning in a Gross Anatomy Dissection Course. PLoS ONE. 2015; 10: e0142988. doi: 10.1371/journal.pone.0142988.
7. Sammaraiee Y, Mistry RD, Lim J, Wittner L, Deepak S, Lim G. Peer-assisted learning: filling the gaps in basic science education for preclinical medical students. Adv Physiol Educ. 2016; 40: 297–303. doi: 10.1152/advan.00017.2015.
8. Stephens JR, Hall S, Andrade MG, Border S. Investigating the effect of distance between the teacher and learner on the student perception of a neuroanatomical near-peer teaching programme. Surg Radiol Anat. 2016;38: 1217–1223. doi: 10.1007/s00276-016-1700-3.
9. Bugaj TJ, Blohm M, Schmid C, Koehl N, Huber J, Huhn D, et al. Peer-assisted learning (PAL): skills lab tutors' experiences and motivation. BMC Med Educ. 2019;19: 353.
10. Field M, Burke JM, McAllister D, Lloyd DM. Peer-assisted learning: a novel approach to clinical skills learning for medical students. Med Educ. 2007; 41(4): 411–418. doi: 10.1186/s12909-019-1760-2.
11. Tolsgaard MG, Gustafsson A, Rasmussen MB, Høiby P, Müller CG, Ringsted C. Student teachers can be as good as associate professors in teaching clinical skills. Med Teach. 2007; 29: 553–557. doi: 10.1080/01421590701682550.
12. Rashid MS, Sobowale O, Gore D. A near-peer teaching program designed, developed and delivered exclusively by recent medical graduates for final year medical students sitting the final objective structured clinical examination (OSCE). BMC Med Educ. 2011; 11: 11. doi: 10.1186/1472-6920-11-11.
13. Ten Cate O, Durning S. Peer teaching in medical education: twelve reasons to move from theory to practice. Med Teach. 2007; 29: 591–599. doi: 10.1080/01421590701606799.
14. Ten Cate O, Durning S. Dimensions and psychology of peer teaching in medical education. Med Teach. 2007; 29: 546–552. doi: 10.1080/01421590701583816.
15. Olaussen A, Reddy P, Irvine S, Williams B. Peer-assisted learning: time for nomenclature clarification. Med Educ Online. 2016; 21: 30974. doi: 10.3402/meo.v21.30974.
16. Bulte C, Betts A, Garner K, Durning S. Student teaching: views of student near-peer teachers and learners. Med Teach. 2007; 29: 583–590. doi: 10.1080/01421590701583824.
17. Weidert JM, Wendorf AR, Gurung RAR. Filz T. A Survey of Graduate and Undergraduate Teaching Assistants. Coll Teach. 2012; 60: 95–103. doi: 10.1080/87567555.2011.637250
18. Luckie DB, Mancini BW, Abdallah N, Kadouh AK, Ungkuldee ACP, Hare AA. Undergraduate teaching assistants can provide support for reformed practices to raise student learning. Adv Physiol Educ. 2019; 44: 32–38. doi: 10.1152/advan.00090.2019.
19. Dandavino M, Snell L, Wiseman J. Why medical students should learn how to teach. Med Teach. 2007; 29: 558–565. doi: 10.1080/01421590701477449.
20. Zheng B, Wang Z. Near-peer teaching in problem-based learning: Perspectives from tutors and tutees. PLoS One. 2022 Dec 14;17(12):e0278256.
21. Zhang Y, Maconochie M. A meta-analysis of peer-assisted learning on examination performance in clinical knowledge and skills education. BMC Med Educ. 2022 Mar 5;22:147.
22. Zaletel I, Marić G, Gazibara T, Rakočević J, Labudović Borović M, Puškaš N et al. Relevance and attitudes toward histology and embryology course through the eyes of freshmen and senior medical students: Experience from Serbia. Ann Anat. 2016; 208: 217–221. doi: 10.1016/j.aanat.2016.07.002.
23. Ross MT, Cameron HS. Peer assisted learning: a planning and implementation framework: AMEE Guide no. 30. Med Teach. 2007; 29: 527–545. doi: 10.1080/01421590701665886.
24. Loda T, Erschens R, Loenneker H, Keifenheim KE, Nikendei C, Junne F. Cognitive and social congruence in peer-assisted learning – A scoping review. PLOS ONE. 2019; 14: e0222224. doi: 10.1371/journal.pone.0222224.
25. Bowyer ER, Shaw SCK. Informal Near-Peer Teaching in Medical Education: A Scoping Review. Education for Health. 2021 Apr;34(1):29.
26. Chaiklin, S. 2003. The Zone of Proximal Development in Vygotsky's Analysis of Learning and Instruction. In. Kozulin A, Gindis B, Ageyev V, Miller S, editors. Vygotsky's Educational Theory in Cultural Context (Learning in Doing: Social, Cognitive and Computational Perspectives,). Cambridge, United Kingdom: Cambridge University Press; 2003; pp. 39-64.
27. Tayler N, Hall S, Carr NJ, Stephens JR, Border S. Near peer teaching in medical curricula: integrating student teachers in pathology tutorials. Med Educ Online. 2015; 20: 27921. doi: 10.3402/meo.v20.27921.
28. Fischer MA, Mazor KM, Baril J, Alper E, DeMarco D, Pugnaire M. Learning from Mistakes. Factors that influence how students and residents learn from medical errors. J Gen Intern Med. 2006; 21: 419–423. doi: 10.1111/j.1525-1497.2006.00420.x.
29. Khaw C, Raw L. The outcomes and acceptability of near-peer teaching among medical students in clinical skills. Int J Med Educ. 2016; 7: 188–194. doi: 10.5116/ijme.5749.7b8b.
30. Gottlieb Z, Epstein S, Richards J. Near-peer teaching programme for medical students. Clin Teach. 2017; 14: 164–169. doi: 10.1111/tct.12540
31. Border S, Parton W, Myers M, Elmansouri A, Harrison C, Stephens J, et al. Ten considerations for implementing effective and sustainable near-peer teaching in clinical anatomy education. MedEdPublish. 2017; 6: 25. doi: 10.15694/mep.2017.000087.
32. Schalk KA, McGinnis JR, Harring JR, Hendrickson A, Smith A.C. The undergraduate teaching assistant experience offers opportunities similar to the undergraduate research experience. J Microbiol Biol Educ. 2009; 10: 32–42. doi: 10.1128/jmbe.v10.97.
33. Qureshi ZU, Gibson KR, Ross MT, Maxwell S. Perceived tutor benefits of teaching near peers: insights from two near peer teaching programmes in South East Scotland. Scott Med J. 2013; 58: 188–192. doi: 10.1177/0036933013496935.

34. Hall S, Harrison CH, Stephens J, Andrade MG, Seaby EG, Parton W et al. The benefits of being a near-peer teacher. Clin Teach. 2018;15: 403–407. doi: 10.1111/tct.12784.

35. Pintér Z, Kardos D, Varga P, Kopjár E, Kovács A, Than P, et al. Effectivity of near-peer teaching in training of basic surgical skills – a randomized controlled trial. BMC Medical Education. 2021 Mar 12;21(1):156.

36. Khapre M, Deol R, Sharma A, Badyal D. Near-Peer Tutor: A Solution For Quality Medical Education in Faculty Constraint Setting. 2021. Cureus. 13(7):e16416.

37. Thampy H, Alberti H, Kirtchuk L, Rosenthal J. Near peer teaching in general practice. Br J Gen Pract. 2019 Jan 1;69(678):12–3.

STAVOVI I MIŠLJENJA STUDENATA PRVE GODINE MEDICINE O UČENJU HISTOLOGIJE I EMBRIOLOGIJE UZ POMOĆ VRŠNJAČKOG PODUČAVANJA: ULOGA STUDENATA DEMONSTRATORA

Miloš Bajčetić[1], Ana Pešikan[2] , Katarina Milutinović[1], Ana Ilijevski[1], Aleksa Leković[3], Jelena Rakočević[1], Ivan Zaletel[1]

Sažetak

Vršnjačko podučavanje (eng. peer-assisted learning, PAL) je vrsta nastavne metode gde učenici prenose znanja drugim učenicima i kroz taj process istovremeno i sami uče. Katedra za histologiju i embriologiju Medicinskog fakulteta Univerziteta u Beogradu ima dugogodišnju tradiciju vršnjačkog podučavanja, koja se ostvaruje angažovanjem studenata demonstratora na osnovnim studijama tokom praktičnih časova mikroskopije. Cilj ovog istraživanja bio je da se iz ugla studenata prve godine procene stavovi i mišljenja o radu studenata demonstratora na predmetu histologija i embriologija. Podaci su prikupljeni od 512 studenata sa prve godine osnovnih akademskih studija medicine korišćenjem anonimnog polustrukturisanog upitnika. Analiza odgovora pokazala je da su skoro svi naši studenti tražili pomoć studenata demonstratora tokom trajanja nastave iz histologije i embriologije. Pored toga, 65% studenata izjavilo je da im je lakše da traže pomoć od studenata demonstratora nego od zvaničnog nastavnog osoblja. Većina studenata veruje da su im studenti demonstratori posvetili dovoljno vremena tokom praktične nastave. Skoro 90% studenata se složilo da su im studenti demonstratori dali dobre savete i odgovore, a više od 80% smatra da nikada nisu dobili netačne informacije od demonstratora. Više od 40% studenata može da vidi sebe u ulozi demonstratora u budućnosti. Ovi rezultati ukazuju da studenti demonstratori imaju značajno mesto u nastavnom planu i programu histologije i embriologije i da njihova uloga u svakodnevnoj nastavi predstavlja jedan od najvažnijih aspekata vršnjačkog podučavanja.

Ključne reči: vršnjačko podučavanje, medicinska edukacija, nastava, kurikulum

Primljen: 28.08.2023. I **Revizija:** 04.12.2023. I **Prihvaćen:** 27.02.2024

Medicinska istaživanja 2024; 57(1):107-114