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SMALL GROUP DISCUSSIONS (SGD) WITHIN THE TEAM-BASED LEARNING (TBL) STRATEGY AS A POTENTIAL FORM OF DISTANCE PHARMACOLOGY LEARNING

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The main task of higher education at the present stage is to prepare students who are able not only to obtain certain theoretical knowledge, but also to master the skills of applying the acquired knowledge in specific situations.

Pharmacology is, first of all, an interdisciplinary subject, which results in an understanding of the drug's effects on the human body. The consequence of this is that students obtain the necessary theoretical basis for, agonistic or antagonistic effects of drugs on certain receptors in body tissues, the main biochemical pathways of interaction with relevant receptors, pharmacokinetics, drug metabolism, mechanisms of drug dependence and toxic effects of medicines, especially, taking into account the genetic variation of each person in his response to the drug.

Effective pharmacology teaching is necessary to ensure that medical students were especially competent in the use of drugs [1]. A safe and effective prescription - is a fundamental skill that must be purchased by graduates of medical schools, as improper drugs prescription may cause exacerbation and prolongation of illness or damage to the patient.

Pharmacology is the basis of medical practice, but most students perceive it as a complex subject. Given the intensive creation of new forms of drugs (drug discovery), traditional models of teaching medical students are outdated and do not contribute to the successful development of pharmacology. A certain difficulty in teaching pharmacology is caused by the constant change in the range of registered drugs, ideas about the mechanisms of drug action, side effects, dosage forms and regimens.

It should be noted that the basic postulate in the teaching of pharmacology should be based primarily on the role of the student in the process of mastering the material of the discipline [2] and the formation of the skill of independent decision-making in certain situations [3].

Most universities, including foreign ones, are still using nowadays well-established model of teaching pharmacology, based on a combination of lectures, workshops and independent work [4], which is more static, with less emphasis on the ownership interest of the student in the learning process. [5].

In the context of the COVID-19 pandemic, when educational institutions were forced to switch to distance learning, the availability of interactive electronic distance learning platforms in higher education is certainly relevant to the continuity of the educational process [6], as online resources are able to maintain the continuity of

student learning through the use of various online resources and interactive learning modules [7].

Providing interactive online resources for teaching pharmacology contributes to the effective students involvement in the cognitive process [8], which will motivate and shape the principles of student clinical thinking [9]. In the course of dialogic learning, students learn to think critically, solve complex problems based on the analysis of circumstances and relevant information, weigh alternative opinions, make informed decisions, participate in discussions. The use of interactive teaching methods helps to increase students' interest not only in the discipline but also in medicine in general, allows them to better understand the goals, objectives and place of pharmacology in the system of higher medical education. This conclusion is consistent with data from other studies that have shown a positive attitude of students to the introduction of electronic technology in their studies [10].

For this purpose, may be the most reasonable to conduct online classes using the technique of group classes (TBL), which serves as a basis for discussion of the use of certain drugs in a specific pathology of an organ or system with checking the adequacy of the selected treatment and monitoring of possible side effects of the proposed drugs [11]. Team based learning (TBL) is gaining popularity among students in those medical schools where it has carried out the transition from traditional lecture programs to the use of interactive online resources [12]. Students note that the TBL strategy encourages greater participation in the learning process than traditional lectures, helps to increase the level of final preparation, which is manifested by an increase in exam scores, helps to develop problem-solving skills and critical thinking. A feature of the TBL strategy is the fact that students can rely on their own knowledge, create a discussion with other students to make a final decision [13]. Unlike classical lectures, which focus on "content coverage", the method of teaching TBL is aimed primarily at the application of knowledge in an interactive environment and also ensures the effectiveness of the use of various educational resources [14]. Moreover, one of the benefits of the TBL approach ensures that misunderstanding and/or lack of understanding of certain concepts at the individual level, is addressed in discussion and peer learning during the team readiness assurance process [15]. Team (TBL) learning is more effective than traditional didactic lecture (TDL) in improving learning outcomes [16].

One way to implement a TBL strategy using interactive online resources in the teaching of pharmacology can be the use of problem-based learning (PBL) in small groups (small group discussions, SGD) with an emphasis on the use of Case-study. The method of small group discussions (SGD) involves the use of cases (situational tasks) indicating the problem of using the drug (drugs) in a particular clinical situation for further discussion [17]. When using small group discussions (SGD) in a practical lesson, a group of students is divided into teams (2-5 students), which receive 1 "case". Students are invited to analyze a specific situation online, understand the essence of the problem, suggest possible solutions and choose the best one [18].

As an example of the SGD use in clinical pharmacology the workshop on cardiovascular diseases and risk stratification can be taken. During the workshop, students divided into small groups, each worked through three simulated patient cases in a PBL-based format. Cases were developed to represent low, intermediate, and high

risk presentations for acute chest pain. Throughout the session, the students should be guided using a multidisciplinary approach to organize, synthesize and prioritize the patient's medical data into an appropriate differential diagnosis and management plan, including the discussion on the subject of prescription nitrates or ranolazine in patients suffering from microvascular angina.

The result of the case method is the actualization of a certain set of knowledge of the student, which must be implemented in solving a real clinical problem, which corresponds to the competence approach in the use of drugs or their combinations in solving professional problems, and provides maximum interaction of all students in the academic group [19].

Another method of teaching pharmacology, which can be used productively in distance learning, is the use of structural-logical schemes (SLS), which contain key concepts, phrases, formulas, illustrations, arranged in a certain logical sequence. For example, the teacher makes a blank in the form of a structural-logical scheme with empty blocks, and students fill in the empty blocks and establish connections between them. This method of visual display helps to systematize information, draw parallels between individual data, and allows you to memorize information faster and stronger, because such clarity is based on the structure and associative relationships that characterize long-term human memory.

An alternative way to implement a small group discussion (SGD) strategy may be to use the "planned mistakes" method. In this case, the task stipulates that the scheme must be intentionally errors (usually not more than 3-5). In the process of peer review, students must find and correct all planned errors.

Students in small group discussions also have the opportunity to counsel the simulated patient by covering the correct use of medication by all group members (Step-by-step Discussions).

An additional advantage of using case methodology in team (TBL) training is the fact that it standardizes certain requirements for the learning process, in contrast to, for example, classes only in certain sections of one course, improves communication and analytical skills of students [20], which will increase the level of knowledge of students, including students with learning difficulties [21].

Thus, TBL-strategy and small group discussions (SGD) act as an elements of student-centered learning, which allow to activate thinking, unleash the potential of each student, to promote the active study of pharmacology and to integrate of previously acquired basic knowledge. And, therefore, to become a new way to improve the quality of teaching pharmacology.

However, innovative pedagogical technologies cannot be universal and will not completely replace the traditional form of education, but at the same time will be able to significantly increase the level of professional training of future specialists.

References:

1. Brinkman, D., Tichelaar, J., Okorie, M., Bissell, L., Christiaens, T., & Likic, R. Et al. (2017). Pharmacology and Therapeutics Education in the European Union Needs Harmonization and Modernization: A Cross-sectional Survey Among 185 Medical Schools in 27 Countries. *Clinical Pharmacology & Therapeutics*, 102(5), 815-822. Doi: 10.1002/cpt.682

2. Wright, G.B. (2011). Student-Centered Learning in Higher Education. *International Journal Of Teaching And Learning In Higher Education*, 23(1), 92-97.
3. Engels, F. (2018). Pharmacology education: Reflections and challenges. *European Journal Of Pharmacology*, 833, 392-395. Doi: 10.1016/j.ejphar.2018.06.032
4. Prober, C., & Heath, C. (2012). Lecture Halls without Lectures — A Proposal for Medical Education. *New England Journal Of Medicine*, 366(18), 1657-1659. Doi: 10.1056/nejmp1202451
5. Vemuri, V., & Sukumaran, S. (2019). A comparative study of interactive and conventional teaching methods in pharmacology for better clinical application. *International Journal Of Basic & Clinical Pharmacology*, 8(10), 2309. Doi: 10.18203/2319-2003.ijbcp20194277
6. Alsoufi, A., Alsuyihili, A., Msherghi, A., Elhadi, A., Atiyah, H., & Ashini, A. Et al. (2020). Impact of the COVID-19 pandemic on medical education: Medical students' knowledge, attitudes, and practices regarding electronic learning. *PLOS ONE*, 15(11), e0242905. Doi: 10.1371/journal.pone.0242905
7. Rose, S. (2020). Medical Student Education in the Time of COVID-19. *JAMA*, 323(21), 2131. Doi: 10.1001/jama.2020.5227
8. Karaksha, A., Grant, G., Anoopkumar-Dukie, S., Nirathanan, S., & Davey, A. (2013). Student Engagement in Pharmacology Courses Using Online Learning Tools. *American Journal Of Pharmaceutical Education*, 77(6), 125. Doi: 10.5688/ajpe776125
9. Charsky, D., & Ressler, W. (2011). "Games are made for fun": Lessons on the effects of concept maps in the classroom use of computer games. *Computers & Education*, 56(3), 604-615. Doi: 10.1016/j.compedu.2010.10.001
10. Maclean, Joanna & Scott, Karen & T, Marshall & P, Van. (2011). Evaluation of an elearning teaching resource: What is the medical student perspective?. *Focus on Health Professional Education: A Multi-disciplinary Journal*. 13. 53-64.
11. Ross, S., & Maxwell, S. (2012). Prescribing and the core curriculum for tomorrow's doctors: BPS curriculum in clinical pharmacology and prescribing for medical students. *British Journal Of Clinical Pharmacology*, 74(4), 644-661. Doi: 10.1111/j.1365-2125.2012.04186.x
12. Carrasco, G., Behling, K., & Lopez, O. (2019). Implementation of Team-Based Learning: a Tale of Two New Medical Schools. *Medical Science Educator*, 29(4), 1201-1210. Doi: 10.1007/s40670-019-00815-0
13. Ho, C. (2019). Team-based learning: A medical student's perspective. *Medical Teacher*, 41(9), 1087-1087. Doi: 10.1080/0142159x.2018.1555370
14. Dashputra, Amruta & Srivastava, Tripti & Chari, Suresh & Date, Amit & Shende, T & Professor, Assistant. (2017). Applicability of team based learning in pharmacology. *Indian journal of Pharmacy and Pharmacology*. 4. 1-4. 10.18231/2393-9087.2017.0001.
15. Goolsarran, N., Hamo, C. E., Lane, S., Frawley, S., & Lu, W.-H. (2018). Effectiveness of an interprofessional patient safety team-based learning simulation experience on healthcare professional trainees. *BMC Medical Education*, 18(1), 1–8. <https://doi.org/10.1186/s12909-018-1301-4>

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16. Zgheib, N., Simaan, J., & Sabra, R. (2010). Using team-based learning to teach pharmacology to second year medical students improves student performance. *Medical Teacher*, 32(2), 130-135. Doi: 10.3109/01421590903548521
17. Arias, A., Scott, R., Peters, O., mcclain, E., & Gluskin, A. (2016). Educational Outcomes of Small-Group Discussion Versus Traditional Lecture Format in Dental Students' Learning and Skills Acquisition. *Journal Of Dental Education*, 80(4), 459-465. Doi: 10.1002/j.0022-0337.2016.80.4.tb06104.x
18. Sivam, S. P., Iatridis, P. G., & Vaughn, S. (1995). Integration of pharmacology into a problem-based learning curriculum for medical students. *Medical Education*, 29(4), 289–296. doi.org/10.1111/j.1365-2923.1995.tb02851.x
19. Edmunds, S., & Brown, G. (2010). Effective small group learning: AMEE Guide No. 48. *Medical Teacher*, 32(9), 715–726. doi.org/10.3109/0142159x.2010.505454
20. Tayem YI. The Impact of Small Group Case-based Learning on Traditional Pharmacology Teaching. *Sultan Qaboos Univ Med J*. 2013;13(1):115-120. doi:10.12816/0003204
21. Burgess, A. W., mcgregor, D. M., & Mellis, C. M. (2014). Applying Established Guidelines to Team-Based Learning Programs in Medical Schools. *Academic Medicine*, 89(4), 678–688. doi.org/10.1097/acm.0000000000000162