

Medical Education

How to Teach Students Mastering Practical Skills Without Stress by the Example of Fourth-Year Dental Students

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Abstract

The article presents the results of the experimental study devoted to stress prevention in the course of directed formation of practical knowledge and skills in students. Since all the students constantly suffer from chronic constructive stress, the traditional system of acquiring knowledge and skills becomes time-consuming. There is a low assimilation of the material by students due to a lack of understanding of their tasks.

The objective of the study was to increase the efficiency of mastering practical skills in therapeutic dentistry considering the students' psycho-emotional state.

Materials and methods. There were formed 2 groups of fourth-year students studying in different groups who attended the course of periodontology. In Group I (35 students), the teacher explained the specific purpose and benefits of manual removal of dental deposits using Gracey curettes and provided a specific manipulation scheme. The teacher slowly demonstrated each action: the instrument and the specific tooth for which it is used. Then, the students were offered to independently remove dental deposits according to the scheme. 34 students of Group II learned traditional removal of dental deposits using Gracey curettes. The teacher explained the manipulation, and, then, slowly demonstrated it on dental moulage. Afterwards, students independently performed the manipulation. We compared the success of mastering practical skills by students and developing an automatic skill.

Results. 34 students of Group I (97.1%) removed dental deposits properly on the first try, and after 10 identical manipulations, all students of Group I developed an automatic skill. In Group II, only 44.1% of students (15 individuals) developed an automatic skill after performing 10 identical manipulations. It should be noted that the main students' actions in this group were accompanied by a considerable number of mistakes; students incorrectly selected dental tools for removing the deposits, and the teacher spent a lot of time correcting these mistakes.

Conclusions. The proposed method is an effective means of directed formation of manual action complex in students. The creation of action schemes for specific manipulation allows us to simplify the learning process reducing the time for the formation of automatic skills in students.

Keywords

educational process; practical skills; periodontology; removal of dental deposits; students

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Problem statement and analysis of the recent research

The educational process in higher medical institutions provides the formation of dental practitioner. Therefore, the sharpening of practical skills and abilities alongside with the sequential analysis and their practicing is the main task of the teacher [3, 7, 8, 9, 10]. Depending on the theme of a particular practical lesson, the teacher needs to be versatile in his approach. Teaching methods should serve as:

- a way of exchanging information between a teacher and a student (verbal, visual, practical);
- a way of managing students' cognitive activity (direct, indirect and self-management);

- a way of communication between teachers and students (frontal, individual, group);
- a way of stimulating and motivating studying the subject and deontological education;
- a way of controlling the effectiveness of the learning process [3, 9, 10].

In credit-modular system of the educational process, students should learn a large amount of theoretical material independently. The adaptation to the perception of a huge amount of information depends on the student's psychological capabilities. When studying at the university, young people are exposed to various types of stress, namely psychological stress, emotional stress and informational stress. Informational stress

is the most dangerous as it is the result of information overload or information vacuum [6]. In addition to working with dental mouldages, modern education requires close contact with patients, due to which students experience professional stress that is an emotional state caused by an unexpected and tense situation on the background of intellectual and emotional overload. This is precisely why, the teacher should help students properly master practical skills necessary for future career [3, 7, 8, 11, 12] to prevent constant emotional stress - emotional burnout syndrome [1, 2, 6]. When applying the existing system of student training, there is a low assimilation of the material. In our opinion, it is due to the failure to take into account the students' psycho-emotional state and the absence of a pedagogically grounded methodology that allows practicing certain techniques until they become automatic. The objective of the research was to improve the efficiency of mastering practical skills by dental students under conditions of constant psycho-emotional stress.

1. Materials and methods of the research

The basis of our experiment was the theory of the phased formation of “mental actions and ideas” [5]. P.Ya. Galperin found that the formation of mental activities leads to the formation of ideas and an idea is a dual formation: the understanding of action content and own thinking of it as a mental action, that is, the essence of the latter. The second element of this action is inner attention which is formed through the control of the subject content of action [5]. The author emphasized that the idea is not the attention. Every human action is initiated by the idea which consists of three components: orientational, acting and control one. When the action becomes mental and changes into “understanding”, the acting component changes in the automatic associative passage of the objective content of action into the field of consciousness, and the control one changes in the act of referring “I” to the content of action, own subject's activity, his/her inner attention and consciousness as an act merge into one feeling [4]. Thus, the execution of any action consists of the following components: orientational, acting and control one. The first one is responsible for meaningful action execution, its correctness and quality; the second one is responsible for the execution of action itself (to take a certain dental tool in the hand and perform a specific manipulation); the third one is self-monitoring ability, i.e. the ability to automatically correct movements [4, 5].

We developed a complete scheme for specific practical manipulation: the removal of dental deposits using Gracey curettes. We singled out the individual elements: the objective of action, the basic material and its characteristics, the instruments of action (dental tools), the plan and the sequence of actions for realizing the objective, the elements of controlling action correctness. An important moment when developing action scheme is the explanation of certain stages of manipulation using pictures (the selection of instruments by number or label depending on the tooth from which dental deposits have to be removed, the positioning of instruments, the main

stages of manipulation, the elements of the control). When a student, despite constant psycho-emotional stress during the study at the university and large amount of theoretical material, receives a concrete scheme for practicing a certain skill, he performs this manipulation properly on the first try. The second important task of our experiment was organizing the conditions for the formation of practical action and practicing the latter until it has the required quality of execution: at the beginning of the practical part of the lesson, the teacher read the scheme of actions, and, then, slowly executed each action. Afterwards, students read the scheme independently and slowly carried out the removal of dental deposits from dental mouldage using Gracey curettes. The teacher should not prohibit students from using the scheme for carrying out practical skills during the manipulation, until the students carry out it by themselves without using the scheme remembering the course of manipulation. In such a manner, the teacher will be able to prevent stressful situation, thereby providing a stable formation of practical skills. Well-learned action will turn into an automatic skill if there is no psychological pressure on the student.

We conducted an experiment to select the method for forming practical skills until they become automatic among fourth-year dental students of the Ivano-Frankivsk National Medical University. There were formed 2 groups of fourth-year students studying in different groups. Group I (35 students) studied according to the proposed method (the experimental group). 34 students of Group II learned traditional removal of dental deposits using Gracey curettes. In Group I (35 students), the teacher explained the importance of manual removal of dental deposits, the advantages and necessity of choosing this method in acute inflammation of gums, exacerbation of inflammatory and dystrophic processes of periodontal tissues, and provided a specific manipulation scheme with the selection of the number or colour of curette label depending on the tooth from which dental deposits have to be removed. Then, he slowly demonstrated each element of action on dental mouldage. Afterwards, students independently removed dental deposits using Gracey curettes according to the scheme. In Group II, the teacher explained the purpose of dental deposit removal first, and, then, slowly demonstrated it on dental mouldage. Afterwards, students independently performed the manipulation.

We determined the correctness of carrying out practical skill and calculated the number of students who removed dental deposits properly, and their performance of manipulation became automatic.

2. Results

34 students of Group I (97.1%) removed dental deposits properly on the first try, and after 10 identical manipulations, all students of Group I developed an automatic skill; all the students did not experience psychological stress during the lesson. In Group II, only 44.1% of students (15 individuals) developed an automatic skill after performing 10 identical

manipulations. The teacher observed psycho-emotional stress in this group of students. It should be noted that the main students' actions in this group were accompanied by a considerable number of mistakes; students incorrectly selected dental tools for removing the deposits, and the teacher spent a lot of time correcting these mistakes. Comparative indicators of the formation of dental removal skills showed that the experimental method allows to avoid performance errors while training students, skills become automatic after 10 identical manipulations.

3. Discussion

Despite constant contact with patients, the acquisition of practical skills requires considerable effort from the teacher and students [3, 5, 7, 8, 11, 12]. During practical class, students experience informational stress. From a psychological point of view, such a condition includes a specific form of human reflection of an extreme situation and a behavioral pattern as a response to this reflection [1, 2]. Scientists have proven that stress caused by physical activity is not as destructive as stress caused by failure, self-doubt, mental overload [6]. Our experimental study was based on the theory of the phased formation of "mental actions and ideas" proposed by P.Ya. Galperin. There were selected 69 students who were divided into 2 groups. In Group I, the teacher explained the goals the dentist will reach after the removal of dental deposits using Gracey curettes, and provided a specific manipulation scheme with a step-by-step selection of curettes depending on the tooth from which dental deposits have to be removed. Then, the teacher demonstrated each action on dental moulage and offered students to carry out similar actions using the scheme. Students of Group II learned traditional removal of dental deposits where special attention was paid to skill description. The obtained results are consistent with those other investigators have reported [4, 5]. We consider that dental students should receive theoretical knowledge as well as develop automatic practical skills without experiencing any stress.

4. Conclusions

1. The proposed method of mastering practical skills is an effective means of directed formation of automatic actions based on theoretical knowledge.
2. The development of action schemes for each manipulation will allow us to simplify the learning process reducing the time for mastering a specific skill.
3. Step-by-step mastering of practical skills will prevent the development of stress and emotional burnout among students.

5. Prospects for further research

The development of action schemes for all practical skills in practical periodontology for training fourth-year dental

students is promising.

References

- [1] Berezhkova LV. Kak sokhranit zdorovye nervnoy sistemy: sovety nevrologa. Moscow: OLMA-PRESS Ekslibris; c2002. 160p.
- [2] Bulakh VP. Stress and its effects on a human body. Med-sestrynstvo. 2014;3:10-16. [published in Ukrainian]
- [3] Voronenko YuV. Problemy okhorony zdorovia ta obhruntuvannia perspektyv rozvytku vyshchoii medychnoii osvity v Ukraini. Medychna osvita. 1999;1:6-11.
- [4] Galperin PYa. Umstvennoye deystviye kak osnova formirovaniya mysli i obraza. Available from: www.psychology-online.net
- [5] Galperin PYa. K voprosu vnimaniya. Available from: www.psychology-online.net
- [6] Kaposhyn VF. Yak dolaty stres u pedahohichnii diialnosti. Praktychna psykholohiia ta sotsialna robota. 2004;8:58-68.
- [7] Kostitska IO, Botsiurko VI. Do pytannia etyko-psykholohichnykh norm navchalnoho protsesu na klinichnykh kafedrah. Arkhiv klinichnoii medytsyny. 2009;2(15):66-69.
- [8] Milierian VYe. Metodychni osnovy pidhotovky ta provedennia navchalnykh zaniat u medychnykh vyshchykh uchbovykh zakladakh. Kyiv: Vyshcha osvita. c2006. 23-41.
- [9] Pityk OM, Pityk MI. Dosvid vyroblennia u studentiv-medykiv rozuminnia praktychnoho znachennia znan ta umin z predmetu "Osnovy psykholohii. Osnovy pedahohiky" v maibutnii profesiinii diialnosti. Arkhiv klinichnoii medytsyny. 2009;1:82-84.
- [10] Samodryn AP. Shkolotvorenna na zlami stolit. Post-metodyka. 2001;5-6:30-35.
- [11] Skrypnikov MS. Osoblyvosti ta osnovni napriamky rozvytku vyshchoii stomatolohichnoii osvity v Ukraini. Stomatoloh. 2000;1-2:9-11.
- [12] Tsiura SB. Formuvannia profesiinonii kontseptsii studenta: dva pidkhody do upravlinnia samoorhanizovanymy studentamy. Visnyk vyshchoii medychnoii osvity. 2010;1:28-34.

Received: 20 Nov 2017

Revised: 12 Dec 2017

Accepted: 20 Dec 2017