

ANALYTICAL-HEURISTIC EDUCATION TYPE INFLUENCE ON MEDICAL STUDENTS PROFESSIONAL MOTIVATION DEVELOPMENT

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Abstract

Introduction. The competence of the medical worker is the key to a healthy nation. Therefore, the implementation of innovative forms, methods and types of training for the training of motivated medical professionals is an important task facing institutions of higher medical education.

The purpose. To establish the analytical-heuristic education type influence degree on the socially-oriented medical students professional motives educational activity development degree and on the indicators of the average learning score.

Materials and methods. In our research, the main methods were - anonymous survey and anonymous questionnaire, analysis, synthesis, comparison and description of research results and heuristic methods. A total of 664 medical students took part in the study, (438 were foreign countries citizens from whom 37% were men and 63% were women) and 226 were Ukrainians (of whom 26% were men and 74% were women).

Results. According to the higher medical education anonymous survey results, we have identified a socially oriented professional motives list for learning and classified them into the following groups:

- 1 Cognitive (knowledge of others, to understand the others behaviour causes)
- 2 Social-transformational (correction of human behaviour; to form a healthy culture in people)
- 3 Educational (provide people with medical knowledge, promote medical knowledge on prevention and prevention of diseases, provide practical advice on healthy living)
- 4 Moral and spiritual (to benefit people, benefit society)
- 5 Socio-psychological interaction (communication with different people, helping family, friends, people).

It is established that the analytical-heuristic training type influences the socially-oriented professional motives educational activity development degree in the applicants of higher medical education. After the implementation of this education type - high level development indicators increased among Ukrainian students by 27.1% and abroad - by 21%. Indicators of a high degree of development of moral and spiritual motive: "the medical profession will provide opportunities to be useful for people" increased among Ukrainian students by 10.6%, and abroad - by 8.9%. After the analytical-heuristic education type implementation in applicants for higher medical education, we found an increase in socially-oriented professional motives development degree for learning activities in all our groups.

It was stated that the combination of heuristic and analytical teaching methods also contributed to the growth of the average learning score for the academic year. In groups of Ukrainian students the average score 4.0-4.5 points increased by 11.7%, and in foreign students the average score 4.25-4.5 - increased by 8.7%.

Conclusion. Overall, after the analytical-heuristic education type implementation in the educational process, the both groups respondents increased the socially-oriented professional motives development degree of educational activity (cognitive, social-transformational, educational, moral-spiritual and socio-psychological interaction). This indicates the effectiveness and efficiency of this type of training.

Keywords: undergraduate medical education, analytical-heuristic educational type, socially-oriented motives, professional motivation, education effectiveness and efficiency.

1 INTRODUCTION

The competence of the medical worker is the key to a healthy nation. The modern student of higher medical education needs more innovative approaches for learning to acquire professionally important knowledge and the formation of professionally important skills. Therefore, the implementation of innovative forms, methods and types for the training of motivated medical professionals is an important task facing institutions of higher medical education. One of the training effective types is heuristic-analytical, which complements the traditional (classical) type of training.

It is clear that the implementation of this training type requires an understanding of its essence, methods, techniques and techniques. First of all, consider the meaning of the "heuristic-analytical learning" definition. To do this, first consider each of these training types separately. Heuristic learning is a type of learning that aims to develop a student's professionally important competencies, in accordance with his own educational trajectory. Quite a lot of scientific works are devoted to this education type. For example, scientific works that cover heuristic learning issues: a) schoolchildren (Hilbert TS, Renkl A., Kessler S., & Reiss K. (2008); Blumenfeld Phyllis & Mergendoller John & Swarthout Donald (2006) [1] and others) and b) students (Phyllis C. Blumenfeld, John R. Mergendoller & Donald W. Swarthout (1987); Reiss K., & Renkl A. (2002); Keys CW, Hand B., Prain V. , & Collins S. (1999); Gilovich, Griffin, & Kahneman (2002) and others).

Analytical training is a training type that assumes that the higher education applicant, analyzing certain facts will invent an objective truth, a certain meaning that underlies the phenomenon, event, situation, etc. (that is, according to certain signs and symptoms will make an objective patient diagnosis) Some analytical training aspects devoted her dissertation "Experimental-analytical training of students in pedagogy" (2010) Kosolapova L.A.

Traditional heuristic-analytical training was introduced into the educational process of training psychologists and its methodology was covered in the theses of O. Tsilmak (2021). Thus, heuristic-analytical learning is "a type of learning that combines cognitive, creative and analytical activities of higher education, reproductive and productive learning" [13]. This training type has also been introduced for the future medical workers training.

Higher educational students motivation has a great importance for educational activities. Sinclair HK, Ritchie LD, Lee AJ dealt with the motivation of medical students and young doctors. (2006), Lekhan VM, Maksymenko OP. (2016), Sripa P, Thepwongsa I, Muthukumar R. (2020) and others. Personal-activity motives were described by us in the scientific article "Personality-oriented motives characteristics' specialties of today's medical students professional activity "(Artyomenko V., Tsilmak O., Formaniuk Y., Lazor K. (2021)).

However, the question of the education type influence on the medical students' educational activity development degree of socially-oriented professional motives and on the average education score indicators in scientific works was not covered.

1.1 The aim

The aim of our study was to establish the influence of analytical-heuristic education type degree on the medical students' educational activity socially-oriented professional motives development degree and on the average learning score indicators.

1.2 Tasks

To achieve this goal we have solved the following tasks:

- 1 Survey of applicants for higher medical education on the types of physician professional activity motives to group them by areas (personality-oriented, personality-socially oriented and personality-professionally oriented) and the questionnaire development [1];
- 2 Questionnaire development in Google form to ensure anonymity and facilitate the calculation of the medical students questionnaires results on the established groups motives development degree for their future professional medical activities [1];
- 3 Anonymous questionnaires analysis results and medical activity socially-oriented motives qualitative and quantitative characteristics establishment in foreign medical students (hereinafter abbreviated - IMS) and Ukrainian medical students (hereinafter abbreviated - UMS);
- 4 Implementation of the heuristic-traditional type of studying into the educational process;

- 5 Checking the physicians professional activity socially-oriented motives development degree in foreign and Ukrainian students a year after the heuristic-traditional type of education implementation.

2 MATERIALS AND METHODS

2.1 Participants

Applicants for higher education in various specializations studying at the Odessa National Medical University were asked to take a questionnaire anonymously using a link to Google Forms. A total of 664 medical students took part in the study, of which 438 were citizens of foreign countries (of which 37% were men and 63% were women) and 226 were citizens of Ukraine (of which 26% were men and 74% were women).

2.2 Research procedure

The study consisted of the following stages:

- 1 Foreign medical students and Ukrainian medical students survey of various specializations studying at the Odessa National Medical University (to establish a list of doctor's professional activity socially-oriented motives);
- 2 Questionnaire development in Google form to ensure the questionnaire anonymity and the calculation of results;
- 3 Anonymous questionnaire results analysis with its detailed description;
- 4 Heuristic-traditional educational type implementation into the of Odessa National Medical University educational process;
- 5 Foreign and Ukrainian different specializations medical students survey of a year after the heuristic-traditional education type implementation to check the doctor's professional activity socially-oriented motives development degree.

2.3 Research methods

In our research, the main methods were - anonymous survey and anonymous questionnaire, analysis, synthesis, comparison and research results and heuristic methods description.

2.4 Data analysis

We used Google Form and Microsoft Excel to process quantitative empirical data indicators obtained during our research.

2.5 Ethical approval

The study was anonymous, it was conducted in accordance with ethical principles and with the voluntary students consent.

3 RESULTS

According to the higher medical education anonymous survey results, we have identified a list of socially-oriented professional motives for learning and classified them into the following groups: 1) cognitive (knowledge of others, to understand others behaviour causes); 2) social-transformational (correction of human behaviour; to form a healthy culture in people); 3) educational (provide people with medical knowledge, promote medical knowledge on prevention and prevention of diseases, provide practical advice on healthy living); 4) moral and spiritual (benefit people, benefit society) and 5) socio-psychological interaction (communication with different people, help family, friends, people).

Cognitive socially-oriented professional motives allow to get to know others, by establishing the reasons that influence the patient's behaviour, by knowing the psychological characteristics of individuals and their manifestation during the illness. According to the results of an anonymous survey, respondents believe that the medical profession will give them the opportunity to get to know others (see Table 1):

- a) Fully agreed with this statement - 68.7% of IMS and 60.1% of UMS;

- b) Partially agreed with this statement - 21% of IMS and 28.4% of UMS;
- c) Partially disagreed with this statement - 10.3% of IMS and 11.5% of UMS.

Also, most respondents believe that the medical profession will give them the opportunity to get to know others (see Table 1):

- a) Fully agreed with this statement - 66.7% of IMS and 64.2% of UMS;
- b) Partially agreed with this statement - 24.8% of IMS and 17.3% of UMS;
- c) Partially disagreed with this statement - 8.9% of IMS and 18.5% of UMS.

After the heuristic-analytical type education implementation of the of in the educational process, the indicators of a high degree of development of cognitive socially-oriented professional motives increased by (see Table 1):

- 1 The profession of a doctor will give me the opportunity to get to know others
- 2 "The profession of a doctor will give me the opportunity to understand the causes of human behaviour" in Ukrainian students by 27.1% and foreign - by 21%.

Table 1. Cognitive socially-oriented professional motives of medical students (before and after the heuristic-analytical education type implementation)

The medical profession will provide an opportunity to:		Foreign medical students n=438 (indicators are presented in %)					Ukrainian medical students n= 226 (indicators are presented in %)				
		5	4	3	2	1	5	4	3	2	1
Get to know others	Before implementation	68,7	21	10,3	–	–	60,1	28,4	11,5	–	–
	After implementation	97,1	2,9	–	–	–	92,4	7,6	–	–	–
Understand the reasons for behaviour	Before implementation	66,3	24,8	8,9 0	–	–	64,2	17,3	18,5	–	–
	After implementation	93,4	6,6	–	–	–	85,2	14,8	–	–	–

Symbols: 5 - completely agree; 4 - partially agree; 3 - partially disagree; 2 - do not agree; 1 - I hesitate with the answer

After the heuristic-analytical type education implementation in the educational process, the high degree cognitive socially-oriented professional motives development indicators increased by:

- 1 "The profession of a doctor will give me the opportunity to get to know others" - Ukrainian students' motivation increased by 32.3% and foreign - by 28.4%.
- 2 "The profession of a doctor will give me the opportunity to understand the causes of human behaviour" - Ukrainian students' motivation increased by 27.1% and foreign - by 21%.

Comparing the quantitative indicators of IMS and UMS with each other, we can state that these cognitive motives are of high importance for all respondents groups. Because, it is through others knowledge and the reasons for their behaviour that you can choose an individual approach to each patient.

Regarding the degree of social-transformational motives and socially-oriented professional motives in the applicants for higher medical education development. The desire to preserve the health of patients is reflected in such socially transformational motives of professional activity as - "the medical profession will provide an opportunity to correct human behaviour" and "the medical profession will provide an opportunity to form a healthy culture in people."

For these reasons, applicants for higher education are also set quite high. Thus, in particular, such a professional activity motive as "the medical profession will provide an opportunity to correct human behaviour", according to the anonymous survey results an in 91.6% of IMS and 87.6% of UMS - has a high development degree (they fully agreed with this statement). After the heuristic-analytical education type implementation in the educational process, these indicators increased slightly in IMS by 3.1% (ie in 94.7% of IMS this motive has a high degree of development), and in UMS - by 5.8% (in 93, 3% UMS).

Regarding the social-transformational motive of the socially-oriented professional motive "the profession of a doctor will provide an opportunity to form a healthy culture in people" - this motive has a high development degree in 100% IMS and UMS (applicants fully agreed with this statement).

Consider the respondents anonymous survey results on the higher medical education students educational motives development degree of socially-oriented professional motives. The provision of medical services is not possible without the medical worker educational activities.

Regarding the educational motives "the medical profession will provide people with medical knowledge" and "the medical profession will provide the opportunity to promote medical knowledge on disease prevention and prevention" - these motives have a high development degree in 100% IMS and UMS (applicants fully agreed) . Regarding the educational motive "the medical profession will provide an opportunity to provide practical advice on a healthy lifestyle" with the following statement:

- 1 Fully agreed - 96.3% of IMS and 96.9% of UMS;
- 2 3.7% of IMS and 3.1% of UMS partially agreed.

After the heuristic-analytical education type implementation in the educational process, these indicators are for all applicants for higher education. That is, this motive is 100% in both IMS and UMS has a high development degree.

Regarding the socially-oriented professional activity moral and spiritual motive development degree of a doctor "the profession of a doctor will provide opportunities to be useful to people" (see table 2).

Table 2. Medical students moral-spiritual socially-oriented professional motive (before and after the heuristic-analytical education type implementation)

<i>The medical profession will provide an opportunity to:</i>		<i>Foreign medical students n=438 (indicators are presented in %)</i>					<i>Ukrainian medical students n= 226 (indicators are presented in %)</i>				
		<i>5</i>	<i>4</i>	<i>3</i>	<i>2</i>	<i>1</i>	<i>5</i>	<i>4</i>	<i>3</i>	<i>2</i>	<i>1</i>
To be useful to people	Before implementation	84,2	13,9	1,9	–	–	84,5	12,8	2,7	–	–
	After implementation	93,1	6,9	–	–	–	95,1	4,9		–	–

Symbols: 5 - completely agree; 4 - partially agree; 3 - partially disagree; 2 - do not agree; 1 - I hesitate with the answer

As we see, doctor's professional activity moral and spiritual motive "the profession as a doctor will provide opportunities to be useful to people" is mostly high in both IMS and UMS. After the analytical-heuristic education type implementation, applicants for higher medical education have indicators of a high moral and spiritual motivation development degree: "the medical profession will provide opportunities to be useful to people" increased by 10.6% for Ukrainian students and 8.9% for foreign students. (see table 2).

Regarding the socially-oriented professional motives development degree is socio-psychological interaction. The communicative component is important for medical professional activity. The doctor's professional communication with patients is the key to their recovery. Since it is faith in the doctor that motivates faith in recovery.

The motives "the medical profession will provide opportunities to communicate with different people" and "the medical profession will provide opportunities to help family, friends, people" - have a high development degree in 100% IMS and UMS (applicants fully agreed with this statement).

Thus, as we see from the results of anonymous questionnaires, after the analytical-heuristic education type implementation in applicants for higher medical education (IMS and UMS), we found an increase in the socially oriented professional motives development degree for all groups.

4 CONCLUSIONS

- 1 Doctor's socially-oriented professional motives professional activity (cognitive, social-transformational, educational, moral-spiritual and social-psychological interaction) of foreign medical students and Ukrainian medical students have a mostly high development degree.
- 2 The analytical-heuristic education type implementation in the educational process is the key to the socially-oriented professional motives growth, as it combines higher educational cognitive, creative and analytical activities, reproductive and productive learning.
- 3 It is established that the analytical-heuristic education type contributes to the applicants professional motivation degree growth for higher medical education.

- 4 It is stated that the analytical-heuristic education type contributes to the educational average score growth for the academic year. This is due to the fact that the motivation development degree for professional activity in applicants for higher medical education is growing. This indicates the effectiveness and this type of teaching efficiency.

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