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The Effectiveness of Education in Internship Phase from the Medical University Student´s Viewpoint

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Authors' contributions

This work was carried out in collaboration between both authors. Authors RP, AT and ES participated in design, draft and analysis. Both authors red and approved the final manuscript.

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ABSTRACT

Introduction: Today, the socio-economic development of countries is due to the university's modernization program, which requires the proper training of a specialized human resource, the student, in which education plays a key role. Among the educational programs of a country, medical education is expensive, because of the nature of this field. Therefore, the purpose of this study was to evaluate the opinions of medical students about the effectiveness of medical education course for use and policy making of educational authorities.
Methods: In this method, from 220 questionnaires, each containing 44 questions, with 6 domains, including achieving goals, curriculum and content, organization and planning, interactions, professor evaluation and support services, designed based on Kirk Patrick's 4-level model was used, and the community of medical students and interns between January 2016 and November 2018 was selected by the full-scale method. Each question contained a 5-point Likert scale of numerical responses including 1, 2, 3, 4, 5 for referring to undesirable, poor, average, good and excellent. Students' opinions were analyzed by SPSS software. Also, the overall reliability of the questionnaire was calculated and reported by Cronbach's alpha for each domain.

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Results: In this study, 118 female and 67 male students were recruited from interns. Findings of this study indicated that the reliability of the questionnaire was 0.956. The mean and standard deviation of the study was 3.01±0.57, for female students 3.04±0.58, for male students 2.95±0.56. In the meanwhile, the achievement of targets and evaluation of professor domains with mean and standard deviation of 3.19±0.67 and 3.21±0.64, respectively, has better result than the overall mean of the study, and curriculum & educational content domains with a mean of 2.94±0.63, organization and planning with a mean of 2.84±0.75, interactions with a mean of 2.95±0.83 and support services with a mean of 2.78±0.75, results was poorer than the overall mean of the study.
Conclusion: Our data suggest that clinical education in the field of medicine in the mentioned period on students, has moderate effectiveness and the students' point of view, this training is also more effective.

Keywords: Effectiveness; medical education; clinical education; internship.

1. INTRODUCTION

The growth and excellence of any society is influenced by its trained human resources. Achieving productivity, improving quality and increasing the effectiveness of the education system can be considered as the most influential factor in developing countries. Efficient and skilled human resources training is a type of investment and is the most important factor in the success of a country's various goals. One of the most reliable ways to increase people's productivity and efficiency is to have effective and productive training [1,2]. Effective education is the goal of many educational programs around the world [3]. Each training program will be fruitful when the people, skills, facilities necessary for its implementation are optimally prepared and then the outcome of the training and the effectiveness of the training are continually evaluated and the results evaluated are used and implemented to improve planning [4]. The medical field is one of the most extensive scientific and community-based disciplines and medical students are the guarantee of future community health. On the other hand, medical education is one of the costliest educational programs in the country which requires a great deal of time and expense on the part of students and educational planners, and on the other hand the length of medical education and heavy courses and the large volume of its contents more than any other discipline require proper and principled planning for training in this field [5,6]. The use of educational evaluation in medical education is particularly important because it must train the human resources of well-trained practitioner to provide health care. Therefore, the quality of education, especially in this system that is directly concerned with human health, should be evaluated and continually improved [7]. Nowadays in medical sciences universities, viewpoints are on all aspects of the education provided to them constantly reviewed and considered to be an indispensable factor in quality monitoring in universities. The results of these evaluations are used to optimize training programs [8,9]. Clerkships and internships play a key role in shaping the basic skills and abilities of medical students and about 50 percent of the curriculum is dedicated to this field and is an essential resource in preparing students for their professional roles [10,11]. Therefore, the purpose of this project is to determine whether medical education in terms of achieving goals, curriculum and educational content, organizing and planning, interacting, evaluating faculty and support services is effective and efficient or not. Whether real or not, and if they are inadequate and ineffective, the relevant authorities will notice their deficiencies.

2. METHODS

This is a cross-sectional study in the field of research in education. The target population consisted of medical students of Semnan University of Medical Sciences - Iran during the period of January 2016 to November 2018. The research environment of the hospitals affiliated to Semnan University of Medical Sciences consisted of Amir-al-Momenin and Kowsar medical-educational centers. According to the statistical definition, for each of the 44 questions in the questionnaire, 5 to 10 students were required. Finally, a sample of 220 was selected and 185 students were included in the study due to their inclusion criteria.

Inclusion criteria:

1. Being an intern
2. Willingness to answer questions

Exclusion criteria:

1. Unwillingness to participate in the study or disturbed and unusable questionnaire

2.1 Data Analysis

According to the questionnaire key, the sum of the scores for each question ranging from 1 to 5 was calculated and based on the number of questions in each domains, the average of these scores was calculated as the score of each domain, which ranged from 1 to 5. The mean and standard deviation of the total score of the questionnaire and each domain were reported in the student subgroups. Data were analyzed using Kruskal-Walis test ($p > 0.05$) and analysis of variance were used for comparison (ANOVA and Chi-Square) were used for data analysis [12].

3. RESULTS

After analyzing the data by SPSS software and Kruskal-Wallis test or analysis of variance, mean and standard deviation were obtained for each question, and for each domain, and finally, for gender in general. According to Table 1, in the first domain, mean and standard deviation calculated in response to the first question, 3.18±0.94, in response to the second question, 3.20±0.82, in response to the third question, 3.16±0.92, in response to the fourth question, 3.16±0.96 and 3.27±0.88 in response to the fifth question.

According to the results of Table 2, in the second domain, educational and curriculum content, mean and standard deviation calculated in response to the sixth question 2.76±0.87, in response to the seventh question 3.03±0.94, in response to the eighth question, 3.28±0.93, In answer to the ninth question 3.35±0.78, in the tenth question 2.78±0.96, in the answer to the eleventh question 3.17±0.99, in the twelfth question 2.45±1.05, in the answer to the thirteenth question 2.88±1.10, the fourteenth question was 2.28±1.12, 3.15±0.89 in the fifteenth question, 2.73±0.96 in the sixteenth question, and 3.28±1.10 in the seventeenth question.

According to Table 3 in the third domain, organization and planning, mean and standard deviation calculated in response to question eighteen, 2.86±1.10, in response to question nineteenth, 2.49±1.07, in response to twentieth question, 3.11±0.96. Twenty-first was 2.78±0.96 and 2.97±1.05 in response to the twenty-second question.

According to Table 4 in the fourth domain, the mean and standard deviation calculated in response to the twenty-third question were 2.95±1.07, in response to the twenty-fourth question, 2.92±1.07, in response to the twenty-fifth question, 2.67±1.05 and in response to question twenty-sixth, 3.27±0.95.

In Table 5 in the fifth domain, mean and standard deviation in response to the twenty-seventh question 3.92±0.90, in response to the twenty-eighth question, 3.24±0.95, in the twenty-ninth question, 2.85±1.01, in response to the thirtieth question, 2.44±0.92, in response to thirty-first question 3.67±0.86, in response to thirty-second question, 3.32±0.95, in response to thirty-third question, 2.94±1.00, in response to thirty-fourth question, 3.72±0.84. Thirty-fifth was 2.89±0.86, in response to thirty-sixth question, 2.91±1.08, 3.18±1.10, in thirty-seventh question, and 3.44±0.83 in response to thirty-eight question.

In response to the sixth domain questions, mean and standard deviation in answering thirty-ninth question were 2.85±0.95, 2.55±0.95 in fortieth, 3.04±1.01 in forty-first.2.91±1.06 in forty-second and 2.69±1.10 in forty-third and Forty-fourth question were 2.93±1.04.

According to the results, the mean of numerical value in this study for achieving the goals is 3.19±0.67, The median is 3.2 and the quadratic interval ranges between 2.8 to 3.6, In the field of curriculum and learning content 2.94±0.63, The median is 3 and the quadratic interval ranges between 2.5 to 3.4, In the field of organization and planning 2.84±0.75, The median is 2.8 and the quadratic interval ranges between 2.4 and 3.4, In the field of interactions 2.95±0.83, median is 3 and quadratic interval ranges between 2.5 to 3.5, The average numerical value obtained from this study in the field of professor evaluation 3.21±0.64, a median of 3.2 and a quadratic interval ranges between 2.7 to 3.6, In the field of support services 2.78±0.75, The median is 2.8 and the quadrant interval ranges between 2.1 to 3.3. And finally the average numerical value obtained from the whole study is 3.01±0.57, The median equals 3 and the quadratic interval ranges from 2.6 to 3.4 (Table 7).

Table 1. Distribution of student answers to first domain questions, achieving goals

Number and question	Mean ± SD	Number (%)				
		Undesirable	Poor	Medium	Good	Excellent
1. Presenting and expressing the general and behavioral goals of medical education at the beginning of classes	3.18 ± 0.94	(5.4) 10	(15.7) 29	(39.5) 73	(34.10) 63	(5.4) 10
2. Influence of medical courses on the ability of semiotics and physiopathology	3.20 ± 0.82	(2.7) 5	(15.1) 28	(43.8) 81	(35.7) 66	(2.7) 5
3. The impact of medical courses on improving student's clinical attitude	3.16 ± 0.92	(3.8) 7	(18.4) 34	(42.2) 78	(29.2) 54	(6.5) 12
4. The impact of medical courses in fostering and strengthening decision making power in health responsibilities	3.16 ± 0.96	(3.8) 7	(19.5) 36	(41.6) 78	(26.5) 49	(8.6) 16
5. The impact of courses in the diagnosis of diseases from a clinical and laboratory perspective	3.27 ± 0.88	(2.7) 5	(15.7) 29	(38.9) 72	(37.3) 69	(5.4) 10

Table 2. Distribution of student answers to second domain questions, educational and curriculum content

Number and question	Mean ± SD	Number (%)				
		Undesirable	Poor	Medium	Good	Excellent
6. The degree to which the content of medical education corresponds to the needs and expectations of students in the field	2.76 ± 0.87	11(5.9)	61(33)	77(41.6)	33(17.8)	3(1.6)
7. The proportion of medical education content to the needs of the community in this field	3.03 ± 0.94	13(7)	34(18.4)	78(42.2)	54(29.2)	6(3.2)
8. The extent of resources used and new medical sciences	3.28 ± 0.93	6(3.2)	29(15.7)	70(37.8)	66(35.7)	14(7.6)
9. The degree to which the content of the class corresponds to the content of the course	3.35 ± 0.78	2(1.1)	22(11.9)	76(41.1)	78(42.2)	7(3.8)
10. Appropriate content of medical education courses with duration of course	2.87 ± 0.96	17(9.2)	45(24.3)	70(37.8)	50(27)	3(1.6)
11. Holding educational conferences in the clinical setting to increase the scientific potential of medical students	3.17 ± 0.99	7(3.8)	44(23.8)	57(30.8)	64(34.6)	13(7)
12. The importance of students' opinions in internship planning	2.45 ± 1.05	37(20)	64(34.6)	52(28.1)	27(14.6)	5(2.7)
13. Quality of clinical education	2.88 ± 1.10	25(13.5)	39(21.1)	64(34.6)	46(24.9)	11(5.9)
14. Effective use of the journal club	2.28 ± 1.12	54(29.2)	59(31.9)	45(24.3)	19(10.3)	8(4.3)
15. The degree of compliance of the books and pamphlets with the objectives defined for the course	3.15 ± 0.89	9(4.9)	26(14.1)	85(45.9)	57(30.8)	8(4.3)
16. Student benefits from a variety of effective teaching methods throughout the academic year	2.73 ± 0.96	18(9.7)	56(30.3)	75(40.5)	29(15.7)	7(3.8)
17. Professional ethics training and proper communication with patients	3.28 ± 1.10	13(7)	31(16.8)	55(29.7)	63(34.1)	23(12.4)

Table 3. Distribution of student responses to third domain, organization and planning

Number and question	Mean ± SD	Number (%)				
		Undesirable	Poor	Medium	Good	Excellent
18. Time order in department training	2.86 ± 1.10	25(13.5)	40(21.6)	66(35.7)	43(23.2)	11(5.9)
19. suitability of the volume of general courses, Basic and specialized with field requirements	2.49 ± 1.07	38(20.5)	59(31.9)	49(26.5)	36(19.5)	3(1.6)
20. considering the prerequisites of the internship courses	3.11 ± 0.96	12(6.5)	32(17.3)	73(39.5)	59(31.9)	9(4.9)
21. Coordination between theoretical learning and clinical practice	2.78 ± 0.96	19(10.3)	49(26.5)	74(40)	39(21.1)	4(2.2)
22. Observing clinical training stages (observation, instructor companionship, direct performance)	2.97 ± 1.05	17(9.2)	43(23.2)	64(34.6)	50(27)	11(5.9)

Table 4. Distribution of student answers to fourth domain questions, interactions

Number and question	Mean ± SD	Number (%)				
		Undesirable	Poor	Medium	Good	Excellent
23. Appropriate behavior of educational supervisors with medical students	2.95±1.07	(12.4) 23	(18.9) 35	(34.1) 63	(30.3) 56	(4.3) 8
24. Cooperation of the teaching staff of the teaching hospital with the student	2.92±1.07	(11.9) 22	(21.1) 22	(34.1) 63	(28.1) 52	(4.9) 9
25. Enhancing the confidence of the medical student in the clinical setting	2.67±1.05	(15.7) 29	(27) 50	(34.6) 64	(19.5) 36	(3.2) 6
26. Appropriate behavior of the clinical instructor with medical students	3.27±0.95	(4.3) 8	(14.6) 27	(38.4) 71	(34.6) 64	(8.1) 15

Table 5. Distribution of student answers to fifth level questions, professor evaluation

Number and question	Mean ± SD	Number (%)				
		Undesirable	Poor	medium	Good	Excellent
27. Professors' confidence in classroom management	3.92 ± 0.90	4(2.2)	8(4.3)	35(18.9)	88(47.6)	50(27)
28. Using Appropriate Teaching Methods (Lecture, Group Discussion.)	3.24±0.95	9(4.9)	26(14.1)	75(40.5)	61(33)	14(7.6)
29. Ability make motivation and collaboration among students	2.85 ± 1.01	19(10.3)	46(24.9)	71(38.4)	41(22.2)	8(4.3)
30. paying attention to the individual differences of the students	2.44 ± 0.92	30(16.2)	66(35.7)	67(36.2)	20(10.8)	2(1.1)
31. Up-to-date knowledge of professors	3.67 ± 0.86	4(2.2)	15(8.1)	40(21.6)	105(56.8)	21(11.4)
32. Allocate appropriate time to answer questions	3.32 ± 0.95	7(3.8)	25(13.5)	72(38.9)	64(34.1)	18(9.7)
33. Unofficial interaction of professors with students	2.94 ± 1.00	17(9.2)	43(23.2)	64(34.6)	56(30.3)	5(2.7)
34. Academic readiness and mastery for answering students' questions	3.7 ± 0.84	2(1.1)	12(6.5)	50(27)	92(49.7)	29(15.7)
35. The extent to which information technology and training facilitation tools are used	2.89 ± 0.86	12(6.5)	42(22.7)	87(47)	42(22.7)	2(1.1)
36. on time presence of professors in the teaching area	2.91 ± 1.08	25(13.5)	32(17.3)	71(38.4)	47(25.4)	10(5.4)
37. respecting students	3.18 ± 1.10	18(9.7)	29(15.7)	55(29.7)	67(36.2)	16(8.6)
38. The Power of Understanding and Transferring Lessons	3.44 ± 0.83	5(2.7)	15(8.1)	69(37.3)	85(45.9)	11(5.9)

Table 6. Distribution of student answers to area six questions, support services

Number and question	Mean ± SD	Number (%)				
		Undesirable	Poor	medium	Good	Excellent
39. Quality of medical equipment in teaching hospital under university supervision	2.85 ± 0.95	27(14.6)	56(30.3)	70(37.8)	31(16.8)	1(0.5)
40. Quality of Educational Assistance Equipment	2.55 ± 0.95	26(14.1)	64(34.6)	64(34.6)	29(15.7)	2(1.1)
41. sufficiency of patients in the learning environment for learning	3.04 ± 1.01	15(8.1)	36(19.5)	69(37.3)	55(29.7)	10(5.4)
42. The suitability of physical space for theory classes	2.91 ± 1.06	24(13)	32(17.3)	73(39.5)	47(25.4)	9(4.9)
43. Appropriate physical space of the clinic	2.69 ± 1.10	35(18.9)	40(21.6)	62(33.5)	43(23.2)	5(2.7)
44. Suitability of ward physical space	2.93 ± 1.04	20(10.8)	39(21.1)	67(36.2)	51(27.6)	8(4.3)

Table 7. Distribution of numerical value, median and the quadratic interval ranges

Field	Mean of numerical value	Median	Quadratic interval ranges
Goals	3.19 ± 0.67	3.2	2.8 to 3.6
Curriculum and learning content	2.94 ± 0.63	3	2.5 to 3.4
Organization and planning	2.84 ± 0.75	2,8	2.5 to 3.4
interactions	2.95±0.83	3	2.5 to 3.5
professor evaluation	3.21±0.64	3.2	2.7 to 3.6
support services	2.78±0.75	2.8	2.1 to 3.3
average numerical value	3.01±0.57	3	2.6 to 3.4

According to the results in terms of achieving goals from the point of view of male students, mean and standard deviation is 3.10±0.66, median is 2.3, and the quadratic interval ranges between 2.6 to 3.6. In this regard, the mean response rate of female students was 3.24±0.67, The median is 3.4, And the quadratic interval ranges from 2.8 to 3.6. The P-value is 0.167.

In terms of curriculum & educational content in male students, mean and standard deviation were 2.83±0.67, the median is 2.8 and quadratic interval ranges between 2.4 and 3.1. In this regard, the mean response rate of female students is 3.00±0.59, the median is 3.1, and the quadratic interval ranges is between 2.5 and 3.4. The P-value is 0.025 and is statistically significant.

In term of organization and planning on male students, the mean and standard deviation is 2.75±0.75, the median is 2.8, and the quadratic interval ranges between 2.2 and 3.2. In this regard, the mean response rate of female students is 2.89±0.75, the median is 3.00, and the quadratic interval ranges is between 2.4 and 3.4. P-value is 0.097 and is not significant since it is greater than 0.05.

In term of interaction on male students, the mean and standard deviation are 2.95±0.76, the median is 3.00, and the quadratic interval ranges is between 2.5 and 3.5. In this regard, the mean response rate of female students is 2.95±0.86, the median is 3.00, and the quadratic interval ranges between 2.4 to 3.5. The P-value is 0.830 which is not statistically significant.

In terms of professor evaluation on male students, the mean and standard deviation were 3.17±0.62, the median was 3.1, and the quadratic interval ranges between 2.7 and 3.5. In this regard, the mean female student response was 3.23±0.65, the median was 3.3, and the quadratic interval ranges between 2.7 to 3.7. The P-value is 0.291, which is not statistically significant since it is larger than 0.05.

In term of support services on male students, the mean and standard deviation are 2.77±0.77, the median is 2.6 and quadratic interval ranges is between 2.1 to 3.3. In this regard, the average response rate for female students was 2.79±0.75, median 2.8, and quadratic interval ranges is between 2.1 to 3.3. The P-value is 0.808 which is not statistically significant.

In terms of overall study on male students, the mean and standard deviation was 2.95±0.56, the median was 2.9, and quadratic interval ranges between 2.5 and 3.2. In this regard, the mean response rate of female students was 3.04±0.58, the median was 3.1, and quadratic interval ranges between 2.6 and 3.4. The P-value is 0.094. The overall reliability of this study was calculated by Cronbach's alpha method which finally obtained a numerical value of 0.956. In the first to sixth domains, the numbers were 0.787, 0.870, 0.780, 0.806, 0.893 and 0.834, respectively.

4. DISCUSSION

Undoubtedly today, the success of countries in social and economic development is due to university renovation programs. The reason for this success, as a result of the attention given to the training of specialist human resources and students as one of the most important components of the higher education system in each country, is considered as a key element in achieving this success. Higher education is one of the key elements of human development in the country. An important feature of higher education over the past four decades has been the rapid expansion of higher education institutions in developing countries, including

Iran. Indeed, higher education represents an important type of human resource investment that contributes to the overall development of the country by providing and enhancing the knowledge and skills needed in the human resources. Therefore, higher education plays an undeniable role in the advancement of societies and organizations in particular [13]. Therefore, this study aimed to investigate the effectiveness of education in internship from the viewpoint of medical students.

In this study, female students evaluated the effectiveness of education slightly better than male students, (3.04±0.58 vs. 3.01±0.57) Among the achievement and evaluation domain of the professors, with mean and standard deviation of 3.19±0.67 and 3.2±0.64 respectively, better than the overall average of the study, and curriculum and educational content domains with mean of 2.94±0.63, organizing and Planning with a mean of 2.84±0.75, interactions with a mean of 2.95±0.83, and support services with a mean of 2.78±0.75, were poorer than the overall mean of the study. Therefore, the results of our study suggest that clinical education is of medium efficacy, in this study, mean and standard deviation of 3.01±0.57 represent this level of effectiveness.

Various studies have been carried out in this regard, including the study by Akhlaghi et al. (2011) entitled "Evaluation of the quality of educational programs in higher education using the CIPP model". This study examines the diverse community of our study that provides a broader perspective and also examines the quality of education rather than the effectiveness of education. It also examines a narrower statistical population than our study. The study examined 15 factors and 161 indicators that provide a broader view of our study but increase the task of answering questions for the respondent, and the Likert numerical scale of 1 to 5 used to answer questions, which is similar to our study. The results showed that the highest level of total utility was related to faculty member (4.844) and the lowest level was related to budget factor (financial resources). In this study faculty members have higher utility and budget has lower utility levels, similar to our study, in which professor evaluation of higher value and lower value support services were found to be favorable to respondents [14]. In similar study conducted by Najafi et al, in 2009, "Evaluation of the effectiveness of nursing students' community health practice on the basis of the kirk-Patrick's pattern in health care centers. The more it measures, the more valid it is, the more diverse the range of respondents, including clients, and the more reliable and comprehensive the answer is, the wider the view. Finally, the result of the overall examination of the course studied in this study is like our study, moderately satisfied, however, the satisfaction with the educational process and the amount of learning was not assessed in our study [15].

In a study conducted by Rajaee et al., "A Survey of Graduates' Viewpoints on the Performance of the Educational system of golestan University of Medical Sciences in 2007", in which all graduates completed a valid and reliable questionnaire consisting of 36 closed-ended questions. Educational system performance was measured. In this study, the views of the graduate students are investigated, which gives a different perspective to our study. This study was conducted with a questionnaire with fewer questions than our study that limits the researcher's perspective and is superior to our study [16].

A study by Zahedi and Tabrizi in 2007 entitled "The effectiveness of medical education from the viewpoints of students of general medicine of Tehran University of Medical Sciences". The results showed that the mean and standard deviation scores of students' views on curriculum effectiveness, teaching activities, and interaction in education were: 2.35±0.35, 2.5±0.35, and 2.46±0.35, respectively. The theoretical mean was equal to the theoretical mean in the second and third cases. The lower mean obtained about the syllabus than the theoretical average indicates the necessity of revising the general medical doctoral curriculum. Average engagement in teaching activities requires the need to improve the types of interaction and enhance the skills of teachers [17], which is similar to our study.

5. CONCLUSION

From the results of this study, it can be concluded that clinical education in the field of medicine, in Semnan University of Medical Sciences, in the mentioned period, and according to the mentioned students, has moderate effectiveness. From the students' point of view, this training is also more effective. It can be said that the domains with the best effectiveness have received the most attention and the domains with the least effectiveness

have been neglected by the authorities, and more importantly, by the students.

CONSENT AND ETHICAL APPROVAL

The study was conducted after final approval by the Ethics Council and Research Council of Semnan University of Medical Sciences. Full details of the study were given to the participants for clarification. Respecting the student´s right to enter or leave the study was without any coercion. The personal information and answers contained in the questionnaires are kept confidential.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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