The effect of career guidance on undergraduate medical students' specialty preferences

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Abstract

Objectives: To design and implement a career guidance programme for medical students, and to evaluate its effectiveness.

Method: The quasi-experimental single-group study was conducted at the College of Medicine, Jouf University, Sakaka, Saudi Arabia, during the 2018-19 academic year. A modified Medical Career Development Inventory covering 5 areas was used to assess how much students' thinking or planning had improved after implementing the designed career guidance programme following Kern's 6 steps for course design. This was done through focussed group discussions. In the second phase, a comprehensive sample comprising 4th and 5th year male and female medical students was enrolled to assess their readiness, planning and choice of specialties, and to compare the same variables post-intervention. Data was analysed using SPSS 22.

Results: There were 50 students in the first phase; 30(60%) males and 20(40%) females. In phase II, there were 82 subjects; 47(57.3%) males and 35(42.7%) females. Pre-intervention mean result was 2.60±0.29 which increased post-intervention to 3.16±0.20 (p=0.018), suggesting an improved degree of vocational development.

Conclusion: The career guidance programme significantly improved degree of vocational development and readiness to cope with developmental tasks encountered throughout a physician's career.

Keywords: Career guidance programme, Career choice, Medical career, Medical specialties, Specialty preferences.

Introduction

Career guidance programmes for medical students have long been absent from medical education. As a result, some countries have suggested structuring and formalising a career advisory system to be included in accreditation standards and national guidelines, and some medical colleges are now trying to integrate this into the formal course of study.[1]

Career guidance in medical education is of great mutual benefit for the students and their respective societies. Correct career selection leads to satisfaction with work-life and helps physicians in optimising their performance, which leads to improved healthcare standards.[2]

Students persuaded to choose a specialty in which they have no genuine interest could compromise the production of high-quality doctors and academicians. This raises the question of how this interest may be developed, and the answer is that it can be done by offering career guidance, allowing every student to thoroughly comprehend all aspects of various medical specialties so that they make a wise and productive

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final judgment.[3]

There is an urgent call for the introduction of good models of career guidance at an early stage of undergraduate courses adjoined with appropriate quantitative and qualitative remedial measures to fill the gaps resulting from graduates' aversion to some specialties.[4]

Most studies in this regard concentrate primarily on programme satisfaction levels[5] and only briefly address learners' perceptions about the topic[6] or the kind of counselling that would be required to evaluate the vocational interests of medical learners or career guidance programmes. There is insufficient information to develop a systematic career coaching programme.[2]

The current study was planned to design and implement a career guidance programme for medical students, and to evaluate its effectiveness.

Materials and Methods

The quasi-experimental pre- and post-intervention single-group study was conducted within the domain of the problem-based curriculum of the College of Medicine, Jouf University (COM-JU), Sakaka, Saudi Arabia, during the 2018-19 academic year. The study involved 3 stages: preparation, design and implementation, and evaluation. Data were collected using the Medical Career

Development Inventory (MCDI)[6 which measures both the degree of vocational development and the readiness to cope with the developmental tasks encountered throughout a physician's career. It consists of 35 statements that address coping behaviours. The content outline of the inventory is composed of 7 vocational developmental tasks and time periods. Five items for each task-time period were grouped to form 7 homogeneous clusters. The 7 groups with items follow the sequence as: crystallise a career preference (CC); specify physician as career preference (CS); implement physician as career choice (CI); crystallise a specialty preference (OC); specify a specialty preference (OS); how much thinking or planning students have done to implement specialty choice (OI); and stabilise in a practice position (S). In the current study, the OI and S segments were omitted. Students were asked to rate each statement on a 5-point scale.

Criterion-related validity of the total MCDI inventory is significant (r=0.41; p<0.001) and alpha coefficients (reliability) for the scales range from 0.73 to 0.91. The mean scores, ranging 1-5, indicate the focus of vocational development. A mean score of >4 suggests that a participant has coped with the task represented by that scale. A score of 3-3.8 suggests that the task is the focus of coping, whereas a score of 2-2.8 suggests that the task is the subject of concern and reflection. A mean score <2 suggests that the task has not been encountered. The total mean score consists of the sum of the 7 scale mean scores, and indicates the "absolute" degree of vocational development, i.e., the place reached on the continuum of vocational development tasks.[7]

The MCDI was distributed to a comprehensive sample taken from 4th and 5th year undergraduate students to record their readiness, planning and choice of specialties. Sample size estimation was done with power 0.84 for 80% power. Additional 10% subjects were added to account for dropouts.

Data collection was effected by distributing a web-based validated English-language questionnaire using Google forms.

Stage 1 of the study was about preparation. Considering the importance of career guidance for students' career choices, a career guidance programme was developed using the widely employed Kern's 6-step approach for curriculum development[8]: Problem identification and general needs assessment; targeted needs assessment; goals and objectives; educational strategies; implementation; and evaluation and feedback.[8] First, a needs assessment was conducted through focus group

and informal discussions managed by the authors and medical education experts with a sample of students selected using simple random sampling technique. Informal discussion conducted with administrative staff, like the dean, vice-dean, and heads of the internship year committee, quality unit, and academic advisory unit, to investigate their opinions regarding the need for career guidance programme.

Accordingly, the programme was designed and 'defect' areas identified by pre-intervention results were emphasised while outlining the programme.

Stage 2 of the study was about designing the career guidance programme based on literature and the needs assessment of the target population. The aim of the programme was to increase awareness of students' knowledge regarding their future career and mechanism for selecting specialties. After establishing the programme's objectives, suitable matching instructional methods were selected. The programme consisted of an interactive series of workshops, mini-lectures, and panel discussions with experts. Themes of the programme addressed important topics suggested by the students, including career decision-making, reasons for difficult decisions, decision-making procedure, cost-benefit analysis, risk analysis, Saudi Medical License Examination (SMLE), internship year, postgraduate courses and internal admission, differences between basic and clinical sciences specialties, criteria of competition for different residency programsme offered by the Saudi Commission for Health Specialties, residency application, residency preparation, internal/external scholarships and fellowship programmes, and different clinical specialties. Medical education and multidisciplinary experts validated the content and suitability of the programme. Four medical education experts consulted to assess the programme using rating scale designed by the authors. The scale was divided into adequacy and applicability sections on a rating from 1 to 5, with 1 = strongly disagree and 5 = strongly agree.

Stage 3 of the study was implementation and evaluation. For this, data was calculated for the pre-intervention survey, and the intervention was conducted subsequently by executing the career guidance programme and distributing the booklets. The intervention group received the career guidance programme in the form of a series of workshops, panel discussions and interactive lectures in consecutive weeks; one hour each week for 12 weeks. The MCDI was distributed before and after the intervention via app Blackboard Learn, batch emails and WhatsApp. Programme evaluation of the designed intervention took place according to Kirkpatrick's

evaluation of educational intervention, where level 3 addressed changes to students' preferences, i.e., to what extent students changed their thinking and preferences as a result of the intervention.[9]

Data was analysed using SPSS 22. Continuous variables were expressed as mean ± standard deviation (SD). Normal distribution of variables was checked by Shapiro-Wilk test, with a significant score showing non-normal distribution. Scores across different domains before and after intervention were compared using paired t test if the data followed normal distribution. Levene's test of homogeneity was used to determine equal variance in pre- and post-intervention groups. $P < 0.05$ was considered significant.

Results

There were 50 students in the first stage; 30(60%) males and 20(40%) females. In stage III, there were 82 subjects; 47(57.3%) males and 35(42.7%) females.

In the first stage, 5 questions were tackled: *What steps have you taken to plan your career?; What prompted you to* *want a career guidance programme?; What content do you prefer to be addressed in the programme?; Which subject area experts do you want to meet during the programme?; What type of instructional methods would be preferable for the programme's provision?* Fifty six (68.29%) students had prepared themselves by reading about the SMLE, reflecting on their career paths, values, skills, and passions; made pros and cons list for each specialty; evaluated how each path aligned with their values; considered the future consequences of each; and read about the Saudi commission for health specialties guidelines; while 26 (31.71%) had not prepared at all, postponing planning until graduation. Twenty two (26.82%) requested lectures about career decision-making, 43 (53.36%) highlights about SMLE, 16 (19.51%) information on different specialties, 53 (64.63%) internal/external postgraduate programmes, 64 (78.05%) how to develop skills in writing curriculum vitae, cover letters and prepare for interviews, 45 (54.88%) internship programmes, and 29 (35.36%) pros and cons of each specialty. Sixty six (80.48%) of students preferred the programme to be in the form of workshops whereas 5

Table-1: Suitability assessment of the career guidance programme.

Assessment area	Expert group				
	Medical Education Expert 1	Medical Education Expert 2	Medical Education Expert 3	Medical Education Expert 4	Mean±SD
Adequacy	4.3	5	4.5	4.0	4.45±0.36
Applicability	4.0	4.5	4.2	3.8	4.13±0.26

Table-2: Baseline pre-intervention scores in 5 scales of Medical Career Development Inventory (MCDI).

Scale	Mean ± SD Total (n=82)	Mean ± SD Male (n=47)	Mean ± SD Female (n=35)	t value	p Value
1. Crystallize a career preference	2.61±0.35	2.89±0.18	2.33±0.16	3.29	0.080
2. Specify physician as career preference	2.97±0.34	3.18±0.17	2.76±0.36	1.50	0.270
3. Implement physician as career choice	2.60±0.28	2.80±0.00	2.40±0.26	2.18	0.160
4. Crystallise a specialty preference	2.34±0.37	2.53±0.51	2.14±0.10	1.06	0.399
5. Specify a specialty preference	2.47±0.20	2.61±0.06	2.33±0.18	2.17	0.162
Total	2.60±0.29	2.80±0.18	2.39±0.21	2.06	0.174

Table-3: Scores in 5 scales of Medical Career Development Inventory (MCDI) post-intervention.

Scale	Mean ± SD Total (n=82)	Mean ± SD Male (n=47)	Mean ± SD Female (n=35)	t value	p Value
1. Crystallise a career preference	3.15±0.20	3.30±0.18	3.01±0.04	2.27	0.150
2. Specify physician as career preference	3.25±0.30	3.51±0.02	2.99±0.04	17.83	0.003
3. Implement physician as career choice	3.18±0.29	3.41±0.19	2.96±0.11	2.83	0.105
4. Crystallise a specialty preference	3.05±0.20	3.05±0.07	3.05±0.35	0.02	0.985
5. Specify a specialty preference	3.16±0.25	3.37±0.01	2.94±0.04	13.59	0.005
Total	3.16±0.20	3.33±0.02	2.99±0.11	4.11	0.054

SD: Standard deviation.

Table-4: Pre- and post-intervention changes in the results of Medical Career Development Inventory (MCDI) for medical students.

| Scale	Mean ± SD Scores pre-intervention	Mean ± SD Scores post-intervention	t value	p Value
1. Crystallize a career preference	2.61±0.35	3.15±0.20	-2.70285	0.035
2. Specify physician as career preference	2.97±0.34	3.25±0.30	-1.22922	0.265
3. Implement physician as career choice	2.60±0.28	3.18±0.29	-2.92576	0.026
4. Crystallize a specialty preference	2.34±0.37	3.05±0.20	-3.33972	0.015
5. Specify a specialty preference	2.47±0.20	3.16±0.25	-4.32959	0.004
Total	2.60±0.29	3.16±0.20	-3.19318	0.018

SD: Standard deviation.
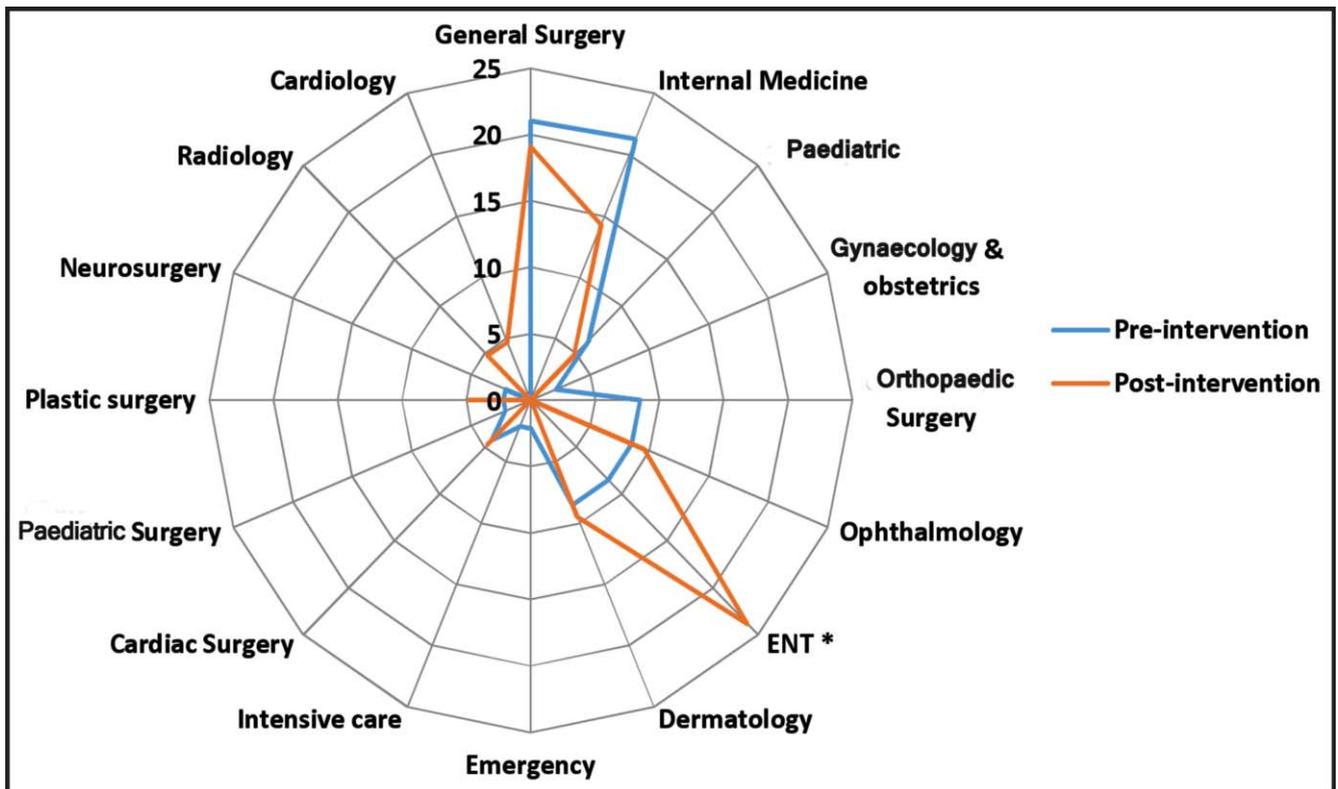
Figure: Pre-intervention and post-intervention changes in undergraduate medical students' specialty preferences.

(6.10%) preferred lectures, (6 (7.32%) panel discussions with experts who are successful seniors in targeted fields, 3 (3.66%) blackboard, and 2 (2.44%) seminars.

From the perspective of administrative staff, one of the important results of the analysis conducted for the five-year strategic plan of the college was the requirement for a career guidance programme.

The final career guidance plan was established through assessment by experts. The career guidance assessment showed mean adequacy 4.45±0.36 and mean applicability 4.13±0.26 (out of maximum score 5.00) (Table-1).

Mean scores along gender lines were not significantly different (Table-2).

Post-intervention mean scores of males were greater through all the scales of MCDI and the total score, but significant difference was found on 2 scales, "specify physician as career preference" and "specify a specialty preference") (p=0.003 and 0.005). The mean scores of the male students were greater post-intervention (Table-3).

There was significant improvement in all scales of MCDI and the total score (p=0.01) post-implementation, except the scale "specify physician as career preference" (Table-4).

Students changed their specialty preferences post-intervention, but it was not significant (p>0.05) except for the ear-nose-throat (ENT) specialty (p<0.05) (Figure).

Discussion

Medical students face some degree of difficulty with career choice.[10] For medical students, selecting a future career path or choosing a specialty is an important lifelong decision. The current study developed, implemented and evaluated a career guidance programme for medical students. Many studies have emphasised the need to create effective student wellness and career advisory systems.[11]

Medical students are more influenced by their employment outlook, socioeconomic status, parents' recommendations, and academic scores than students in engineering and science.[12]

The developed programme was based on the results acquired from the research literature and needs assessment[13] as each institution should develop specific content in the context of its educational environment and medical education curriculum.[14] The programme contents were in harmony with many developed programmes worldwide on a number of topics.[7,13,15] The programme devised in the current study lacked specific educational plans to teach communication skills, time management, stress management, leadership skills, and skills needed to build medical professionalism, as they form part of COM-JU informal courses, contrary to an earlier similar programme which contained all these topics.[15]

The intention of MCDI is to measure both the degree of vocational development and readiness to cope with the developmental tasks encountered in a physician's career.[14] All MCDI scores pre-intervention were at a medium level total mean ranging 2.34-2.97. According to interpretation of the inventory, students' pre-intervention showed concern and reflection about their career. The post-intervention total mean score showed improvement ranging 3.05-3.25.

The designed programme targeted 4th and 5th year students who were about to consider their career choice. First, second and third-year students received academic one-on-one advice, which is not as effective as a systematic career guidance programme[15] thus, they should have access to systematic career coaching that provides accurate information to help them make rational decisions regarding their career.[14]

Post-intervention results showed improvement, suggesting that the place attained on the continuum of vocational developmental tasks increased as a result of the intervention. Thus, the results of the current study indicated a positive impact on the level of career maturity of students, as measured by the MCDI. The results are in keeping with literature.[6] Several studies have emphasised the positive roles of career guidance programmes, such as making career decisions and fewer dropout rates, particularly in specialty choices.[16-18]

The current results showed that medical students at COM-JU preferred surgery, internal medicine, ENT, ophthalmology, dermatology, obstetrics and gynaecology, radiology and paediatrics, which are in agreement with earlier findings.[19-21] There were significant differences between pre- and post-intervention choices regarding ENT. A good proportion of students changed their choices and decision after open discussions with an ENT specialist who succeeded to market his specialty well to the students.

Future studies in this area should identify factors that map students' preferences and career choices, and then assess students' personality traits, aptitude and interest by using Myer-Briggs Type Indicator (MBTI) personality type test and the Strong Interest Inventory (STRONG) assessment to show the factors which influence their career decisions.[22]

Conclusion

The career guidance programme significantly improved the degree of vocational development and readiness to cope with developmental tasks encountered throughout a physician's career among medical students. The programme helped prepare the students in terms of career thinking and decision-making, indicating that the programme accomplished its goal of encouraging students to acquire initiatives when exploring their career and to develop a positive and active perspective.

References

1. Howse K, Harris J, Dalgarno N. Canadian national guidelines and recommendations for integrating career advising into medical school curricula. Acad Med. 2017; 92:1543-8. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5662158/
2. An H, Kim E, Hwang J, Lee S. Analysis of medical students' needs for development of a career guidance program. Korean J Med Educ. 2014; 26:209-16.
3. Gour N. Career counselling among medical students: an urgent need. J Community Med Health Edu. 2011; 1-1.
4. Myhre DL, Sherlock K, Williamson T, Pedersen JS. Effect of the discipline of formal faculty advisors on medical student experience

and career interest. Can Fam Physician. 2014; 60:e607-12.

5. Hur Y, Cho AR, Kim S. How to provide tailored career coaching for medical students. Korean J Med Educ. 2015; 27:45-50.

6. Savickas ML. Construction and validation of a physician career development inventory. J Voc Behav. 1983; 25:106-23.

7. Henry P, Bardo H, Henry C. The effectiveness of career development seminars on African American premedical students: a program evaluation using the medical career development inventory. Am Couns Assoc. 1992; 20:99-112.

8. Kern DE, Thomas PA, Hughes MT. Curriculum Development for Medical Education: A Six-Step Approach. 2nd ed. Baltimore: The Johns Hopkins University Press, 2009.

9. Kirkpatrick, Donald L. Evaluating Training Programs. The Four Levels. Oakland: Berrett-Koehler Publishers, 1998.

10. Sastre EA, Burke EE, Silverstein E, Kupperman A, Rymer JA, Davidson MA, et al. Improvements in medical school wellness and career counseling: A comparison of one-on-one advising to an Advisory College Program. Med Teach. 2010; 32:e429-35.

11. Kim EK. Factors influencing the choice of major for high achievement students in high school. J Eng Educ Res. 2010; 13:80-6.

12. Folsom B, Reardon R. College career courses: design and accountability. J Career Assess. 2003; 11: 421-50.

13. Hur Y. Development of a career-coaching model for medical students. Korean J Med Educ. 2016; 28:127-36.

14. Macaulay W, Mellman LA, Quest DO, Nichols GL, Haddad J Jr, Puchner PJ. The advisory dean program: a personalized approach to academic and career advising for medical students. Acad Med. 2007; 82:718-22.

15. Hur Y, Cho AR, Kwon M. Development of a systematic career coaching program for medical students. Korean J Med Educ. 2018; 30:41-50.

16. Zink BJ, Hammoud MM, Middleton E, Moroney D, Schigelone A. A comprehensive medical student career development program improves medical student satisfaction with career planning. Teach Learn Med. 2007; 19:55-60.

17. Harris JA, McKay DW. Evaluation of medical career counselling resources across Canada. Teach Learn Med. 2012; 24:29-35.

18. Saigal P, Takemura Y, Nishiue T, Fetters M. Factors considered by medical students when formulating their specialty preferences in Japan: findings from a qualitative study. BMC Med Educ. 2007; 7-31.

19. Scott I, Gowans MC, Wright B, Brenneis F. Why medical students switch careers: changing course during the preclinical years of medical school. Can Fam Physician. 2007; 53:94-5.

20. Khader Y, Al-Zoubi D, Amarin Z, Alkafagei A, Khasawneh M, Burgan S, et al. Factors affecting medical students in formulating their specialty preferences in Jordan. BMC Med Educ. 2008; 8:32.

21. Avgerinos ED, Msaouel P, Koussidis GA, Keramaris NC, Bessas Z, Gourgoulianis K. Greek medical students' career choices indicate strong tendency towards specialization and training abroad. Health Policy. 2006; 79:101-6.

22. Chaiporn A, Maurice Y. Intrinsic and Extrinsic Motivation in Personality: Assessing Knowledge Profiling and the Work Preference Inventory in a Thai Population. [Online] [Cited 2021 January 02]. Available from: URL: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2052334.