

Investigating the Relationship between Personality Dimensions in Selecting a Field Specialty for Medical Students of Mashhad University of Medical Sciences

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Background: Selecting a specialty is one of the most difficult decisions for medical practitioners in their professional life, and this selection is affected by personal and intrinsic factors, such as motives and personality dimensions. Therefore, this study investigates the relationship between personality dimensions in selecting the field specialty for medical students of Mashhad University of Medical Sciences.

Methods: This cross-sectional study was conducted on 243 medical students of Mashhad University of Medical Sciences in 2016. Data were obtained from two demographic scales and a 125-item questionnaire of personality assessment according to Cloninger theory and TCI test. The association of 7 dimensions of personality traits was assessed in four groups including specialties of surgery, internal, diagnostic, and psychiatric using SPSS software as well as Kruskal-Wallis and Mann-Whitney tests. The significance level was considered at 0.05 in this study. **Results:** There was a significant difference between men and women regarding reward dependency, harm avoidance, and self-directiveness ($p < 0.05$). Women had a higher mean in terms of reward dependency and harm avoidance, while they had lower mean regarding self-directiveness. There were significant differences among personality dimensions, harm avoidance, persistence, and self-directiveness in specialties ($p < 0.05$); however, harm avoidance had the highest mean in psychiatric specialty; persistence showed the highest mean in surgery specialty, and self-directiveness assigned the highest mean to itself in diagnostic specialty.

Conclusion: Considering the fact that personality patterns can be different in specialties, retraining on the association of personality traits and the selection of specialty can help students, managers, and educational planners in the future.

Keywords: Personality; specialty; medicine; Mashhad

بررسی ارتباط ابعاد شخصیت در انتخاب رشته تخصصی دانشجویان پزشکی دانشگاه علوم پزشکی مشهد

زمینه و هدف: انتخاب رشته تخصصی یکی از دشوارترین انتخاب های یک پزشک در زندگی حرفه‌ای وی می باشد و این انتخاب تحت تاثیر عواملی ذاتی و فردی همچون انگیزه ها و ابعاد شخصیتی فرد نیز میباشد. از این رو مطالعه حاضر به بررسی ارتباط ابعاد شخصیت در انتخاب رشته تخصصی دانشجویان پزشکی دانشگاه علوم پزشکی مشهد می پردازد.

روش: این مطالعه مقطعی، بر روی ۲۴۳ دانشجوی پزشکی دانشگاه علوم پزشکی مشهد در سال ۱۳۹۴ انجام گرفت. اطلاعات با استفاده از دو پرسشنامه اطلاعات جمعیت شناختی و پرسشنامه ۱۲۵ سوالی سنجش شخصیت بر اساس تئوری کلونینجر و آزمون TCI جمع آوری گردید. ارتباط ۷ بعد شخصیتی در چهار گروه تخصص جراحی، داخلی، تشخیصی و روانپزشکی با استفاده از نرم افزار SPSS و آزمون های کروسکال والیس و من ویتنی سنجیده شد. در این مطالعه سطح معنی داری ۰/۰۵ در نظر گرفته شد. **یافته ها:** مردان و زنان در بعد های پاداش وابستگی، آسیب پذیری و خودراهبری دارای تفاوت معنی دار بودند ($p < 0.05$) که زنان در ابعاد پاداش وابستگی و آسیب پذیری دارای میانگین بیشتر و در بعد خودراهبری دارای میانگین کمتری بودند. ابعاد شخصیتی، آسیب پذیری، پشتکار و خودراهبری در بین رشته های تخصصی دارای تفاوت معنی دار بودند ($p < 0.05$) به طوری که در بعد آسیب پذیری رشته های روانپزشکی، در بعد پشتکار رشته های جراحی و در بعد خود راهبری رشته های تخصص تشخیصی دارای بیشترین میانگین بودند.

نتیجه گیری: نظر به اینکه الگوهای شخصیتی در رشته های تخصص می تواند متفاوت باشد پس بازآموزی رابطه میان ویژگی های شخصیتی و انتخاب تخصص میتواند به دانشجویان، مدیران و برنامه ریزان آموزشی در آینده کمک کند.

واژه های کلیدی: شخصیت، تخصص، پزشکی، مشهد

دراسة العلاقة بين أبعاد الشخصية في اختيار مجال تخصص طلاب الطب في جامعة مشهد للعلوم الطبية

الخلفية والهدف: يعد اختيار مجال التخصص أحد أصعب الخيارات بالنسبة للطبيب في مهنته، ويتأثر هذا الاختيار بعوامل فردية مثل دوافع الشخصية وأبعادها. لذلك، تبحث الدراسة الحالية تأثير أبعاد الشخصية في اختيار تخصص طلاب الطب في جامعة مشهد للعلوم الطبية.

الطريقة: أجريت هذه الدراسة المستعرضة على ۲۴۳ من طلاب الطب بجامعة مشهد للعلوم الطبية خلال عام ۱۳۹۴. تم جمع البيانات باستخدام اثنين من الاستبيانات المعلومات الديموغرافية و استبيان ذو ۱۲۵ سؤال من سجل قياس الشخصية على أساس نظرية كلونينجر واختبار TCI. تم تقييم العلاقة بين ۷ أبعاد للشخصية في أربع مجموعات من التخصصات الجراحية والداخلية والتشخيصية والنفسية باستخدام برنامج SPSS واختبارات كروسكال واليس و من ويتن. في هذه الدراسة، اعتبر مستوى الأهمية هو ۰.۰۵.

النتائج: كان هناك فرق كبير ذو معنى بين الذكور والإناث في مكافآت التبعية والتأثر الشخصي والقيادة الذاتية وكانت ($P < 0.05$)، وكان لدى الإناث متوسط أعلى في مكافآت التبعية والضعف، وكانوا ذوي متوسط أدنى في القيادة الذاتية، كانت سمات الشخصية، والتأثر، والمثابرة، والتوجيه الذاتي مختلفة اختلافاً كبيراً بين الفروع التخصصية المختلفة ($P < 0.05$)، حيث كان أعلى معدل لبعده التأثير الشخصي في الفروع النفسية، و في بعد المثابرة في التخصصات الجراحية، وفي بعد الإدارة الذاتية في التخصصات التشخيصية.

الاستنتاج: نظراً لأن أنماط الشخصية يمكن أن تكون مختلفة في التخصصات المتنوعة، فإن إعادة التدريب على الرابطة بين سمات الشخصية واختيار الخبرة يمكن أن تساعد الطلاب والمديرين والمخططين التربويين في المستقبل.

الكلمات المفتاحية: الشخصية، التخصص، الطب، مشهد

میڈیکل طلباء کے ماہرانہ موضوع کے انتخاب میں ان کی شخصیت کے پہلوؤں کے اثرات، یونیورسٹی آف میڈیکل سائنسز مشہد

یہیگ گراؤنڈ: ماہرانہ موضوع تعلیم کا انتخاب ایک ڈاکٹر کی زندگی میں اہم ترین انتخاب ہوتا ہے، کیونکہ اسی پیراس کی پیشہ ورانہ زندگی کا انحصار ہوتا ہے۔ اس انتخاب میں بعض ذاتی اور فردی عوامل جیسے محرکات، اور شخصیت کے اوصاف اثر انداز ہوتے ہیں۔ ان ہی بنیادوں پر مشہد یونیورسٹی آف میڈیکل سائنسز میں یہ تحقیق انجام دی گئی ہے۔

روش: اس تحقیق میں مشہد یونیورسٹی آف میڈیکل سائنسز کے دو سو تینتالیس طلباء شامل تھے۔ یہ تحقیق سنہ دوہزار پندرہ میں انجام دی گئی۔ اس کے لئے دو سوالنامے تیار کئے گئے۔ ایک ڈیموگرافیک سوالنامہ تھا تو دوسرے میں ایک سو پچیس سوالات تھے اور اسے TCI test Cloninger theory to پر استوار تھے۔

نتیجے: اس تحقیق میں حصہ لینے والے طلباء اور طالبات میں وابستگی، خطروں کی زد میں ہونے اور خود سے کام کرنے کی صفات میں کافی فرق تھا۔

شخصیتی پہلوؤں میں خطرے کی زد میں ہونا، تجربہ، اور خود کی صلاحیتوں پر بھروسہ کرنے کے لحاظ سے ماہرانہ موضوع کے انتخاب میں کافی فاصلہ تھا جیسے کہ نفسیات کے موضوعات کو خطرے کی زد کے زمرے میں دیکھا جاسکتا تھا جبکہ سرجری کو تجربے اور دیگر موضوعات جنہیں ہم تشخیصی موضوعات کہہ سکتے ہیں ان کو زیادہ نمبر ملے تھے۔

سفرارشی: اس امر کے مد نظر کہ شخصیتی صفات ماہرانہ موضوع کے انتخاب میں اثر انداز ہوتے ہیں اسی وجہ سے شخصیتی پہلوؤں اور ماہرانہ موضوع کے انتخاب میں پائی جانے والی مشکلات سے آگہی طلباء، اساتذہ اور تعلیمی منصوبہ بندی کرنے والوں کے لئے مفید واقع ہوسکتا ہے۔

کلیدی الفاظ: شخصیت، پہلو، میڈیکل، مشہد

INTRODUCTION

Medicine is a complex and diverse profession in which there is a variety of distinct specialties with differences in their workplace, medical responsibility, and dealing with different patients; therefore, the choice of a specialty in medicine as a discipline directly related to the health of individuals is very important and should be done with caution (1-4).

There are many factors affecting the selection of the specialty among medical students (4-6). Factors such as family, university professors, religious preferences, demographic factors, student's personal experiences before and after education, the characteristics of each specialty, as well as the student's personality traits can be effective (7). In recent years, the personality of the students has been the subject of research, but nevertheless, most studies have mainly focused on the relationship between personality traits and academic performance, and fewer studies have concentrated on the impact of personality in selection of the specialty (8).

In their study Zeldi and colleagues reported that students who choose surgery as a specialty have more male characteristics and lower levels of depression, whereas students choosing gynecology and maternity specializations have more likely feminine features while showing more anxiety. In addition, those who have chosen internal medicine have lower levels of neurosis (9).

In another study on the personality of surgeons, general practitioners, and anesthesiologists by Burgess et al., it was concluded that general surgeons had perseverance, greater resistance to stress, and higher self-esteem than general practitioners and anesthesiologists (1, 10).

Some studies have examined the influence of personality traits, such as empathy, on the selection of specialty. In these studies, the highest scores of empathy were reported among psychiatrists, internists, pediatricians, emergency medicine, and family medicine that had the most interaction with patients, while the lowest scores of empathy were reported in anesthesiologists, orthopedics, neurosurgeons, radiology and cardiac surgery, and other hospital specialties that had less interaction with the patients (11-13).

In general, it is hypothesized that physicians who choose specific specialties may have personality traits share with their colleagues and have distinct personality traits from their counterparts in other specialties (14). Therefore, retraining the relationship between the personality traits of the students and selection of specialty will be useful for further investigation of this complex phenomenon and can help future students, managers, and educational planners. Therefore, this study aimed to investigate the relationship between personality dimensions in selection of specialty for medical students of Mashhad University of Medical Sciences.

METHODS

In this cross-sectional study 249 medical students, apprentices in 2016, were considered as a total census. Only students admitted to Mashhad University of Medical Sciences were included in this study and guest students were excluded, while the only exclusion criterion was forms with very incomplete information. Accordingly six questionnaires

were excluded from the study and finally, 243 participants were examined. All information was collected using a questionnaire that was designed in two sections. The first part included questions about demographic information and selected specialty based on students' priority, and the second part included questions about the dimensions of the students' personality. The TCI test was used to measure the students' personality dimensions based on Cloninger theory. TCI temperament and character inventory is an evaluation tool based on the dimensional model but it can be used to diagnose personality disorders based on the classification model. The TCI is a set of tests consisting of seven dimensions of personality (four dimensions of temperament including novelty seeking with 20 questions, harm avoidance with 20 questions, reward dependence with 15 questions, perseverance with 5 questions, 3 dimensional of behavior including self-directedness with 25 questions, cooperation with 25 questions, and self-transcendence with 15 questions). The temperament and character inventory used in this study has 125 items that the individuals themselves had to answer to each item by true or false. The scoring method of the temperament and character inventory was according to the novelty seeking with 20 questions, harm avoidance 20 questions, reward dependence 15 questions, perseverance 5 questions, self-directedness 25 questions, cooperation 25 questions, and self-transcendence 15 questions, for each of which a score was assigned and the score for each dimension was obtained from the scores of the sub-scales of that dimension. The design of the questions was based on the content of the expression with the correct or the wrong answer leading to an increase in the score on a scale. The temperament and character inventory has been standardized in the Iranian population and its validity and reliability have been evaluated, so that the reliability of the test was appropriate in the population of 101 and the Cronbach's alpha coefficient in the seven dimensions was between 0.73 and 0.90. Also, the internal correlation of TCI scales in a population of 1212 people was appropriate, so that the Cronbach's alpha coefficient in the seven dimensions was between 0.55 and 0.84 (15). After collecting data, due to the high number of specialties, the fields selected by the students were divided into four general groups of surgical, internal, diagnostic, and psychiatric expertise. Data analysis was performed using SPSS software version 19 and Kruskal-Wallis as well as Mann-Whitney tests were administered. In this study, the significance level for statistical tests was considered to be 0.05.

In Cloninger's theory, temperament refers to automatic emotional responses and is somehow inherited and remains stable in long life. On the contrary, character refers to self-concepts and individual differences in the attitudes and values, choices, and meanings of their experiences in life. It is partly influenced by socio-cultural learning and is growing throughout life. Each character and temperament dimension sets up and directs the flow of compatibility and adaptation of life experiences in an interactive device. Susceptibility to emotional and behavioral disorders is influenced by the performance of this interactive device (16). Following are dimensions of the temperament and character inventory defined on the basis of the Cloninger model:

Temperament dimensions

A. Novelty seeking

Behavioral activation is the call of behavior in response to new and novel stimuli and phenomena (reward or relief from punishment). Novelty seeking opens up individual differences in the system of behavioral activation in the brain, and those who obtain high scores have features such as exploration, excitement with stimuli, avoiding uniformity, creativity, early decision-making, insisting on change, susceptibility to distraction, over spending and being highly active, interest in risk taking, and disliking very ordered trends. In contrast, those who have lower score, tend to repeat the previous experience, resist to changes, follow discipline and plans at work, while they are also conservative and committed, and save time and money.

B. Harm avoidance

Behavioral inhibition is done in response to punitive stimuli or lack of rewards. Therefore, the ability of individuals in behavioral inhibition is called "harm avoidance". It is assumed that individual differences in the inhibition system are determined by the brain behavior. The characteristics of people with high scores in this dimension include being prudent, shy, jealous in performing affairs, sensitive to criticism and punishment, pessimistic to events, incompatible with environmental changes, and high fatigue. In contrast, people who have lower scores of harm avoidance are brave, optimistic, and comfortable, while they are convenient with strangers and get tired too late.

C. Reward Dependence

Behavior which has been strengthened in the past is repeated, even in the absence of continued reinforcement. So the continuity of behavior after the reward is discontinued is called "reward dependence". This dimension reflects the individual's differences in the brain system with respect to the setting of rewarded conditional signs, especially in social context. The characteristics of those who have high scores on this scale are supposed to be: kind and intimate, willing toward social attachment and affiliation, sympathetic, needing others' approval, sensitive to rejection and isolation, and sensitive to criticism. However, those who score low are cold, ignorant to the sensitivity of the group, willing to distance themselves with others, serious and rational, practical, self-contained, cautious and, insensitive to the exclusion and neglect of others.

Dimensions of character

A. Self-directedness

It is based on self-perception as an independent individual.

People who have high scores on this scale show features as self-reliant, self-confident, aware of others' attitudes, ready to deal with difficult conditions, goal-directed, and concentrated on the priority of the works. In contrast, those who score low are more reliant on external motivation and blame others and environmental shortcomings. They are irresponsible, have a feeling of inefficacy and low self-confidence, and are hesitant towards goals.

B. Cooperativeness

Cooperativeness is based on self-conception as a part of human societies with features such as sympathetic and supportive, patient and intimate, social sense, synergic, sincere, conscientious, and willing to charity. In contrast, those who obtain lower scores, indicate lower group tendencies, are opportunistic, are single footers, seem selfish in terms of others' viewpoint, and are morally ignorant.

C. Self-transcendence

It is defined based on the concept of self as part of the world and its surrounding resources. People with high scores in this dimension are prone to peak experience, embrace the universe in every possible way, perceive faith, dignity, patience, idealism, and metaphysical experiences, and love art. People who score low on this scale, have low mental image power, are not much affected, are boring for others, are materialistic and objectified, and do not feel responsible to the nature.

RESULTS

The mean age of the 243 students included in this study was 24.76 ± 0.66 . From the total number of participants in this study, 134 (55.1%) were female and 109 (44.9%) were male, while 103 (42.4%) were married and 140 (57.6%) were single.

D. Persistence

Persistence is derived from individual differences in their brain system for setting alternate empowerment. On this basis, indications of intermittent punishment become probable reward signs and are expected to help individuals persist in doing things. Cloninger called this dimension, which does not have a sub-scale, persistence. Hardness, continuity in practice despite pressures, pioneering in doing things, adaptability to unforeseen circumstances, and challenging the hard work can be mentioned as the features of people who have high scores on this scale. However, those who score low are people with low adaptability, willing to be discouraged by hardships and criticisms with no efforts to expand and deepen the work.

		Number	Percentage
Gender	Male	109	44.9%
	Female	134	55.1%
Marital status	Single	140	57.6%
	Married	103	42.4%
Specialty	Surgery	80	32.9%
	Internal	69	28.4%
	Diagnostic	84	34.6%
	Psychiatric	10	4.1%

Table2. Mean and standard deviation of personality dimensions based on gender and marital status

	(NS)	(ST)	(SD)	(P)	(CO)	(HA)	(RD)	
Gender	Male	10.22±4.07	5.89±4.9	14.5±6.63	2.09±2.08	12.5±5.87	8.39±4.33	9.02±3.73
	Female	9.93±4.07	6.65±4.94	13.05±6.1*	1.75±1.71	11.75±6.08	9.78±4.94*	9.84±3.41*
Marital status	Single	9.35±3.54	6.03±4.89	14.35±6.53	2.07±2	12.16±5.61	9.14±4.58	9.65±3.53
	Married	11.03±4.53*	6.69±4.98	12.82±6.07*	1.68±1.73	11.99±6.49	9.18±4.91	9.23±3.65

NS: Novelty Seeking, HA: Harm Avoidance, RD: Reward Dependence, P: Persistence, SD: Self-Directiveness, CO: Co-Cooperativeness, ST: Self-Transcendence, *: significant at 0.05(p<0.05)

Table3. Mean and standard deviation of personality dimensions based on each specialty and with gender control

	NS	ST	SD	P	CO	HA	RD							
Surgery	M	10.8±4.41	6.35±4.98	5.96±5.02	12.35±3.43	12.86±6.01	3.29±2.05*	1.67±2.09	11.48±6.64	11.86±5.77	7.68±4.44	6.2±3.69	10.55±3.66	9.53±3.82
	F	10.6±4.59	10.44±4.11	6.17±5.06	5.44±4.6	11.9±6.27	12.78±6.82	1.1±1.32	1.37±1.39	11.29±6.12	12.7±6.18	8.88±4.65	9.67±4.62	9.5±3.77
Internal	M	9.39±3.36	7.02±4.98	5.54±4.76	14.3±6.95*	19.46±5.34	1.52±1.26*	3.79±1.81	11.88±5.88	12.96±5.68	11.32±4.72	10.5±3.43	9.82±2.9*	7.96±3.91
	F	8±3.67	8.4±3.71	9.6±5.81	13±6.6	12±5	0.4±0.55	0.6±1.34	16±3.74	15±7	13.2±6.57	11.2±3.77	8.6±4.34	9.2±3.9
Psychiatry	M	0.720	0.429	0.718	0.540	0.281	0.001	0.001	0.267	0.712	0.002	0.001	0.421	0.373
	F	0.720	0.429	0.718	0.540	0.281	0.001	0.001	0.267	0.712	0.002	0.001	0.421	0.373

F: female, M: male, NS: Novelty Seeking, HA: Harm Avoidance, RD: Reward Dependence, P: Persistence, SD: Self-Directiveness, CO: Co-Cooperativeness, ST: Self-transcendence, *: significant difference between male and female in each specialty

Before using statistical tests for normalization of 7 dimensions, Kolmogorov-Smirnov test was applied and indicated that all participants were abnormal in this study ($p < 0.05$).

Table 2 indicates the mean and standard deviation of the seven dimensions of personality by gender and marital status. Men and women had a significant difference in dimensions of reward dependence, harm avoidance, and self-directiveness. Women had a higher mean in dimensions of reward dependency and harm avoidance than men, while in dimensions of self-directiveness men had a higher mean than women. Regarding marital status, single individuals had more self-directed behaviors than married people and in the dimension of novelty seeking, married people had a higher mean, and these differences were statistically significant ($p < 0.05$).

In Table 3, the mean and standard deviation of personality dimensions are presented in general specialties by gender. Accordingly, the dimensions of harm avoidance and persistence were significantly different in both genders, while self-directiveness had a significant difference only in men between the two genders ($P < 0.05$). In other dimensions, there was no significant difference between the specialties in any of the sexes.

In the dimension of harm avoidance, the lowest level of harm avoidance was found for men and women in surgical fields, and the highest mean of harm avoidance in both genders was related to psychiatry. The highest mean of persistence was in men in diagnostic specialties, while women had the highest mean of persistence in surgical specialties. In terms of persistence, the lowest mean in both genders was related to psychiatric specialties.

Another personality dimension which had a significant difference in specialties in men was self-directiveness. Men had the highest mean in this dimension in diagnostic specialties, while they had the lowest mean in psychiatry specialties.

Also, personality dimensions between men and women have been investigated according to each specialty in Table 3, which showed that there was a significant difference in the dimension of reward dependence between men and women in diagnostic specialty ($p < 0.05$), so women have a higher mean than men. Men had a higher mean in terms of persistence in diagnostic specialties than women, while women had a higher mean in surgical specialties than men, and these differences were statistically significant ($p < 0.05$). In diagnostic specialty, men had a higher mean in the dimension of self-directiveness.

DISCUSSION

There are various decision-making points in professional life of medical students. Selecting the field of specialty is one of the most difficult choices doctors have to make in their career, while being very stressful because it can affect all aspects of their life (17). On the other hand, choosing a specialty is also influenced intentionally or unintentionally by intrinsic and personal factors, such as motives and personality dimensions (14, 18). This study investigated the relationship between personality dimensions in selecting the

specialty field for medical students of Mashhad University of Medical Sciences.

The findings of this study indicate that there are significant differences in personality dimensions of harm avoidance, reward dependence, and self-directiveness between men and women, which can be cautiously attributed to differences in the roles of men and women in the society.

Due to better career opportunities and financial conditions for men, they are gradually expected to deliver and follow a targeted program, which leads to a gradual increase in self-directiveness dimension in them. On the other hand, women had higher scores in harm avoidance dimension due to having subtle and maternal features and preference to be away from critical situations. Moreover, the reward dependence dimension that represents the intrinsic tendencies of individuals, including getting approval and encouragement, is also higher in women, which is confirmed by El Sheikh and colleagues study (19).

Based on the findings of this study, there is no statistically significant difference between gender and some aspects of personality such as cooperativeness, persistence, self-transcendence, and novelty seeking, which is similar to the results of similar studies. For example, Rizzo in a study has referred to the lack of a difference in personality dimensions in different genders. He also stated that only the harm avoidance dimension has a significant difference between the married ones, which is contradictory with the results of our study, since in the present study the dimensions of self-directiveness and novelty seeking were statistically significant (20).

The comparison of students' personality dimensions showed that the mean of reward dependence dimension in surgery group was higher than other groups and in the novelty seeking dimension, the internal group had a higher mean, but these differences were not statistically significant, which is not consistent with the results of the study by Vaidya et al. However, these differences can be attributed to the differences in samples (7).

The results of the investigation of harm avoidance dimension indicated a significant difference between the surgical group and the other 3 groups of diagnostic, internal, and psychiatry, representing the tendency of individuals to take risks in surgery specialty. Also, the mean score of persistence in the field of surgery was the highest and showed a statistically significant difference between the groups, which is consistent with the results of Lovejoy et al (21) compared to similar studies. Another study by Mehmood et al. suggested that individuals interested in the surgery are those who are interested in challenge and inherently risk-taking (18).

The results of this study showed that there was a significant difference between gender control and dimensions of harm avoidance and persistence, as well as there was a significant difference in self-directiveness dimension among men. The results of Vaidya study also showed a significant difference between the two genders in dimensions of reward dependency, persistence, cooperativeness, and self-directiveness (7), which are consistent with our results in two dimensions of persistence and self-directiveness.

The findings of this study regarding the fact that the highest means belong to the two groups of surgery and psychology in 5 of the 7 personality dimensions indicates that the majority of students with different dimensions of personality are more interested in these two groups. Zeldow et al. in categorization of the degree of interest of medical students in specialties referred to internal medicine, surgery, family medicine, pediatrics, psychiatry, obstetrics and midwifery, and hospital-based specialties, respectively, which is consistent with the results of this study (9). In another study, Mahmoud et al. referred to surgery as the field in which medical graduates are interested (18).

Among the limitations of the study, it can be noted that participants were selected only from medical students in Mashhad. Therefore, this study only provides basic and primary information as well as an idea and cannot be generalized to all medical students in the country. Also, due to the cross-sectional nature of the study and the mere provision of information at a point in time, the use of a different time frame may yield different results.

Considering the fact that according to the results of the study personality patterns are different in different specialties, the study and re-education of the relationship between types and personality dimensions and the choice of specialty can be

used for students, managers, and educational planners to guide students in selecting a field in the future. Given that no similar studies have been carried out in Iran before, it is recommended that the study be repeated with larger samples in many Iranian universities, focusing on different geographical regions.

Ethical considerations

Ethical issues (Including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc.) have been completely observed by the authors

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