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Factors Affecting the Choice of Medical Specialization Training: A Survey of Medical Students in Vietnam

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ABSTRACT

Background: Vietnam is a developing country with a health delivery system heavily oriented toward a hospital-based model. The choice of medical specialization training among university students affects future human resource needs, especially practitioners of family medicine (FM).

Method: This cross-sectional study was conducted in 2019 in southern Vietnam to identify the percentages of medical specializations chosen from among career categories and determine the factors that influence student choice between FM training and other medical specialization programs.

Results: This study involved 1,030 medical students, out of whom 240, 256, 276, and 258 were third-, fourth-, fifth-, and sixth- year students, respectively. Results showed that the students tended to become medical specialists rather than medical practitioners. Those who preferred FM over other disciplines were slightly older (23.8 > 22.95, p = 0.046), belonging to the fifth and sixth years (31.6% and 50% respectively), and more female students than males tended to choose this specialization (63.1% vs 34.2%). Compared with the students who chose other specializations, the FM students were more strongly influenced by friends, placed a stronger emphasis on procedural skills, and sought mastery of few clinical skills. More importantly, the curriculum for medical training and the focus of FM on various medical problems increased interest in FM among the students. Their career choices were relatively affected by internal factors, such as the durations of clinical programs, and external/environmental determinants, including disease patterns affected by air pollution, seasonal diseases, and societal needs.

Conclusion: The findings can help policymakers encourage entry into FM, reorganize current training programs, and emphasize the role and authority. of FM physicians within the Vietnamese health delivery system.

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INTRODUCTION

Primary health care (PHC) is considered a fundamental strategy that encompasses one of the most valuable principles in the promotion of health in many countries. The World Health Organization defined PHC as an essential strategy that is based on practical, scientifically sound, and socially acceptable methods and technologies [1]. These are universally accessible to individuals and families in a community through their full participation and at a cost that the community and country can afford to maintain at every stage of their development in the spirit of self-reliance and self-determination [1]. Since the 19th century, studies have found that the presence of numerous primary care physicians in a population produces excellent health outcomes,

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lowers the rate of mortality from all causes (e.g., low birth weight and lifestyle factors, such as obesity, drinking, and smoking), and improves sociodemographic measurements (percentages of the elderly, urban, and minorities; education; income; unemployment; and pollution) [2, 3]. However, research has also found that in low- and middle-income countries, universal health coverage (UHC) cannot be fully implemented because of the relatively low number of primary care providers. This situation is caused, first, by fragile health systems, which thereby limit the capacity to implement health initiatives [4]. Second, disease-oriented systems typically give rise to inequities because they focus on providing care to the urban high economic class rather than addressing the basic needs of an entire population [5].

These same issues occur in Vietnam given the more-than-a-decade-long overcrowding at central and high-level hospitals in the country [6]. The problem is that an excessive number of patients are admitted into core- and high-level hospitals, whereas a few seek services from low-level medical institutions-a situation that indicates the inadequate development of the country's health delivery system. To deal with this matter, the Vietnamese government has focused on developing a network of family doctors as one of the interventions designed to ease the overcrowding problem and promote general health [7], along with emphasizing medical prevention [8]. However, the implementation of this network has met with many difficulties. A key problem is the shortage in family medicine practitioners, which considerably affects Vietnam's application of the PHC strategy and its pursuit of UHC. Although the need for family physicians was specified in Decision No. 935/QB-BYT [9], the total number of these doctors remains low at present [10]. A necessary measure, therefore, is to innovate and develop a strategy for encouraging medical students to pursue family medicine training and practice for them to align with and suit the transition of the Vietnamese health system.

In consideration of these issues, this study identified the most highly preferred medical specializations among students and analyzed the factors that affect their career choices. It also determined how these decisions ultimately impact the availability of qualified and experienced family medicine practitioners in Vietnam.

METHODS

Research Design

This cross-sectional study was conducted at Pham Ngoc Thach University of Medicine (PNTU) in 2019 to explore the factors affecting students' choice of career, identify the differences between students who choose family medicine and those who opt for other specializations, and ascertain the determinants that positively influence the selection of family medicine as a postgraduate training program.

Population and Criteria Selection

The target population comprised third, fourth, fifth, and sixth year students who hold official citizenship in Ho Chi Minh City. First and second year students were excluded from the survey because these individuals have no clinical experience. Participants were recruited by establishing contact with the Student Service Department of PNTU, from which a list of the total number of students in the target years was obtained. After screening, the students were randomly organized using a systematic sampling technique that afforded each participant the same probability of being included in the study and ensured that they represented the population [11].

For each year, a number was randomly generated as a starting point in accordance with the total number of students per year in a program. In calculating count (kmin = 3), one participant for every third person was selected beginning from the starting point, after which the procedure was repeated.

Sample Size Calculation

Opinions differ as to the proportion of general practitioners that are needed for the adequate provision of primary care around the world. In the case of Vietnam, because its primary care system is in its infancy, no research has been conducted on the ratio of generalists to specialists in the country. This value was thus assumed to be 50:50 (p = 0.5) in accordance with the highest potential sample size. The total sample was determined by summing the number of third, fourth, fifth, and sixth year students recruited. The following formula, which is recommended for calculating sample size in cross-sectional studies [12], was used in calculating the needed number of students for each group:

$$n = Z^2 \frac{p(1-p)}{d^2} \Leftrightarrow n = 1.96^2 \frac{0.5(1-0.5)}{0.05^2} = 385$$

students per group

where Z = 1.96 (95% confidence level), p = 0.5 (ratio: 50/50), and d = 0.05 (confidence interval).

However, according to information supported by the Student Service Department, the total number of students that fit the criteria for the electronic survey was 3,462 < 10,000 (finite population). Therefore, the sample size was adjusted following the formula below, with consideration for non-response from 10% of the initial sample:

$$Nh = \frac{\mathrm{n}/(1+(\mathrm{n}/\mathrm{N}))}{1-r}$$

where
N: Total number of students per year
n: Sample size (385)
r: Possibility of non-response (10%)
Nh: Adjusted sample size

	6th year	5th year	4th year	3rd year
Number of students per year (N)	785	871	933	877
Adjusted sample size (Nh)	287	297	303	297
Total sample		**1,184**		

Data Collection

A questionnaire was designed on the basis of four groups of influencing factors, namely, the demographics, socio-economic characteristics, professional preferences, and self-motivation of the students. A total of 30 factors were related to choose specialization and were subdivided into four groups using a Likert scale ranging from 1 (*unimportant*) to 4 (*very important*). The questionnaire was partially adapted from the study of Gill, McLeod, Duerksen, and Szafran [13] to suit the Vietnamese setting.

Before an invitation to participate was extended to the prospective respondents, a panel of senior experts in medical education and research examined the survey instrument in respect of the appropriateness of content, language, and sequence, with consideration for suitability to the context of the study. In addition, a pilot study was run involving medical students who were not part of the final survey sample. Feedback was collected from the pilot participants, and revisions were made to the questionnaire to eliminate as much of the ambiguity in content as possible.

Data Analysis

The collected survey data were entered into Microsoft Excel (2016, version 16.0.6769.2017) to manage and check the validity of the information. Coding processes were then performed in the Excel platform, and the results were imported into the Statistical Package for the Social Sciences (version 21) [14] for recoding. The data analyses were descriptively presented with frequency distributions and percentages.

In the demography section of the questionnaire, the household wealth index (WI) (the sum of all consumer assets in a student's house) was used to determine the economic status of each medical student's household. A list of 15 validated household assets was adapted from previous studies [15-19], along with a new item added on the basis of the suggestion of other research whose settings were similar to that in the current work. Participants were asked to score each asset between 0 and 1 to determine whether such an item was owned or not. The WI was categorized according to the range of the total scores corresponding to four categories: low economic status (<6), medium status (7–9), medium-to-high status (10–12), and high status (13–15).

Univariate logistic regression was carried out to identify the association of the influencing factors with student choice between family medicine and the combined disciplinary/career groups. Multivariate logistic regression was performed within three models, which featured the top three choices in specializations, to find the factors that favorably influenced the selection of family medicine.

Ethical Considerations

This study was granted ethics approval and clearance from Griffith University (GU ref no: 2019/070) and PNTU (Protocol 5732/QD-TDHYKPNT). Informed consent was obtained from the invited students, and no personal identification was acquired from them during the data collection.

RESULTS

Table 1 shows the general characteristics of the 1,030 (87%) respondents who completed the survey. The response rates among the third, fourth, fifth, and sixth year students were 80.8% (240 of 297), 85.5% (256 of 303), 93% (276 of 297), and 89.9% (258 of 287), respectively. Overall, the respondents were predominantly single (99.3%); 56.0% were female, and most were living in an urban setting (89.2%) and had no parents (80.0%) or relatives (57%) who were health workers.

With regard to socio-economic status, 74.1% of the students were totally dependent on family earnings, and 17.7% earned incomes under 2.5 million VND (approximately US$100) per month. The index also confirmed the absence of economically related differences that affected the career choices of the students. The results indicated that the selection of a career did not depend on demographic characteristics, except for mean age; that is, the students who preferred family medicine were slightly older than the rest of the participants.

Students at different years in their current training programs exhibited different trends in career choice. Figure 1 presents the three choice priorities for postgraduate training among the students, with internal medicine being the most favored by more than half (56.6%) of the respondents and surgery

being the second most frequently selected specialization (one-third or 30.9% of the students). Table 2 illustrates the relationship between the selection of family medicine and each dependent factor, as determined in the univariate and multivariate logistic regressions. Significant variables were those with a p-value < 0.05, but all other variables with a p-value < 0.2 were included in the multiple regression to ensure the highest chance of finding associations between risk factors and the independent variable (family medicine selection). The two factors that strongly stimulated the selection of family medicine by the students were program duration and the opportunity to deal with a variety of medical problems. Social needs and remote incentives partially increased the possibility of influence over choice of discipline.

DISCUSSION

The career selection of the PNTU students was associated with medical curricula and programs seeing as the fifth- and sixth-year students exhibited no interest in family medicine. This specialization is introduced in the fifth-year students' clinical training programs as a two-week session - a late scheduling of exposure and a short course duration. The students who preferred family medicine emphasized the importance of early exposure to the discipline. As argued by Avery, Wheat, McKnight, and Leeper [20], curriculum content positively influences the choice of family medicine as a career. The authors suggested that a special emphasis on family medicine throughout a medical school program is necessary in directing the attention of medical students toward family medicine because this specialization requires time and medical clerkship [21, 22]. The main purposes of this recommendation were to present an overall outlook regarding the role of and social need for family medicine and raise students' interest in the specialization.

Table 2 shows that the students highlighted the importance of procedural skills, the use of a wide range of knowledge in patient care, and the opportunity to engage with various medical issues. Therefore, early exposure to family medicine would create greater benefits for students as they accomplish the succeeding courses in their program. Moreover, the involvement of family physicians in medical school curricula and clinical programs should be considered [23]. The principles of family medicine should be embraced in as many courses as possible throughout years of medical school [22]. This program should be offered over a longer period so as to provide more community-based experiences for students to develop their perceptions on working as a family physician. Together with addressing students' needs for exposure to the diversity of patients, problems, and activities that family physicians deal with each day [24], they should be offered sufficient support by family medicine mentors [22].

The government also plays a crucial role as a structural determinant of the development of a family doctor network. Essentially, the findings revealed that the students who preferred family medicine were also concerned about income-related issues, hospital working conditions, and promotions, similar to other students. For the discipline to appeal to students, the government should redevelop its reimbursement policy in such a way that offers students more incentives and alternative compensation schemes (higher salaries, car ownership incentives car, loan repayments, and work incentives) that sustain the economic aspects of family physicians. Additionally, the flow of patients within a referral system should be strictly managed to redirect and change patient behavior toward the use of health services. This measure would ensure a steady number of patients for family physicians and allow them involvement in teaching and mentoring as well as modifying student awareness. Furthermore, investing in adequate medical equipment for family clinics would translate to improved working conditions. In other words, government reforms and regulations that encourage primary care in health delivery systems are essential in developing the family doctor network in Vietnam and espousing a better vision for medical schools as they elevate student interest in family medicine. An adequate workforce of generalists will not only be sustained by the high performance of the health system but will also facilitate the response to increasing demands in aged care in the coming years. This study recommends that the Vietnam government review the terms, conditions, and remuneration benefits for family medicine graduates to guarantee sustained involvement in this career in the future.

The limitations of this study are worth noting. The nature of a cross-sectional survey can somewhat limit exposure and outcome correlation. This study was intended to capture a glimpse of a point of time, which might not have reflected changes that occur over longer periods. Although the survey questions used in this study required students to provide three preferred choices of a medical career in order of priority, these might not have been their actual preferences because whether students are truthful in reporting their predisposition or realistic choices is unknown. The questions might not have addressed the full breadth of the factors that influence student interest in the examined career categories. In addition, because of the wide range of career options (42 specializations) included in this research, the aspect of social influence on the chosen disciplines could not be included in the

analysis. Such an issue can be better addressed in future research.

Aside from identifying the proportions of career choices, the study focused on the shortage of family medicine practitioners in 2019 without considering the other specializations in detail. In the past, the Vietnam health system centered on developing a hospital-based model, so the assumption was that specialists already dominated the medical workforce while family physicians emerged only more than five years ago. Thus, discovering the prevalence of generalists, especially those practicing family medicine, has become more crucial in the context of Vietnam.

CONCLUSION

The results uncovered that more than 80% of the participating students envisioned themselves working in internal medicine and surgery. Mostly, these choices were dictated by personal needs rather than requirements for the development of the health system in Vietnam. To promote family medicine, medical schools should review and enhance training programs to expose students to family medicine much sooner, and they should redesign other courses that embrace the principles of family medicine.

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CONFLICT

The author reports no conflicts of interest in this work.

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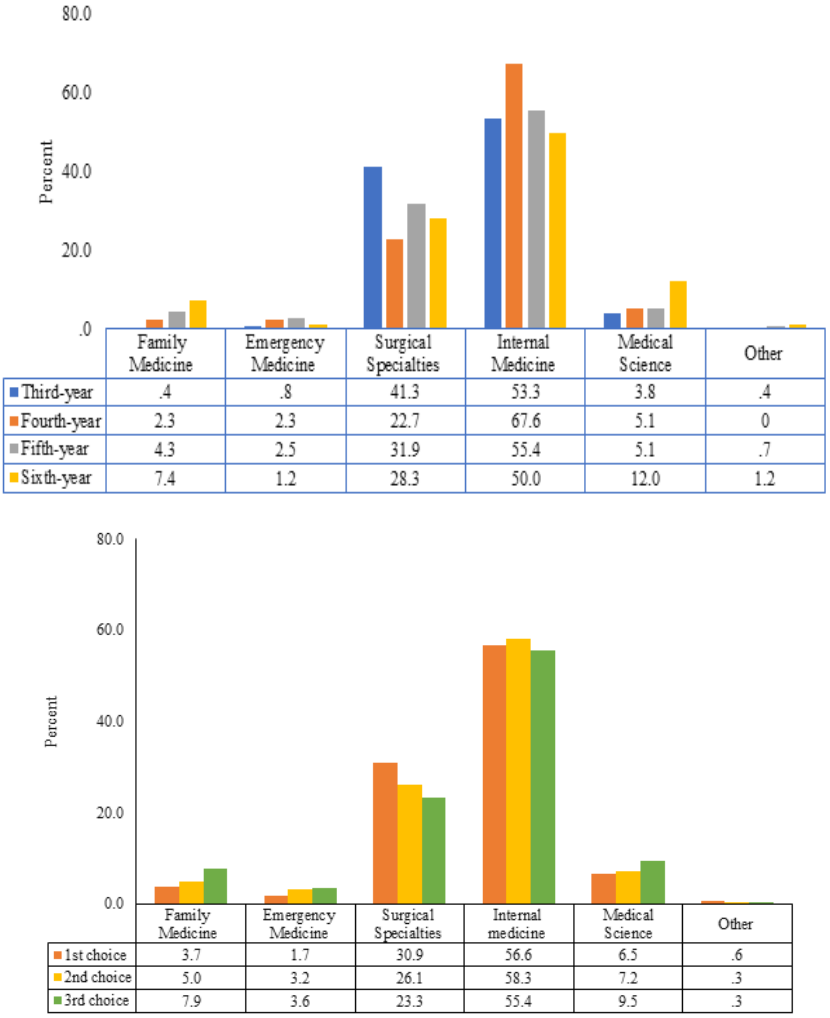

Figure 1: Medical students' preferred careers by program duration and three priority choices

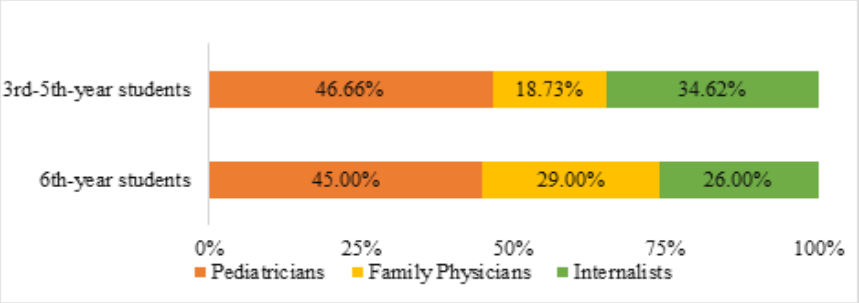

Figure 2: Percentages of generalists among the students

Table 1. Characteristics of Respondents by Preferred Career Choice

Variables	Total N=1030 (%)	p Value*	Variables	Total N=1030 (%)	p Value*
Class year		*<0.001*	**Student Income per month**		0.56
3rd-year	240 (23.3)		None	762 (74)	
4th-year	256 (24.8)		< 2.5 million	178 (17.3)	
5th-year	276 (26.7)		2.5 - 5.0 million	66 (6.4)	
6th-year	258 (25.0)		> 5.0 million	12 (1.2)	
Age		*0.026*	**Average monthly income**		0.136
Mean (SD)	22.9 (1.4)		< 2.5 million	52 (5.04)	
Gender		0.07	2.5 -10 million	464 (45.0)	
Male	428 (41.5)		>10.0 -20.0 million	280 (27.1)	
Female	577 (56.0)		>20.0 million	188 (18.2)	
Not to share	25 (2.42)		Wish not to answer	46 (4.46)	
Student background		0.755	**Specialization**		
Sub-urban	111 (10.7)		Family Medicine	38 (3.69)	
Urban	919 (89.2)		Emergency Medicine	18 (1.75)	
Marital status		0.553	Surgical Specializations	318 (30.87)	
Single	1023 (99.3)		Internal Medicine	583 (56.6)	
Married	5 (0.48)		Medical Science	67 (6.5)	
Separated, divorced, or widowed	2 (0.19)		Other	6 (0.58)	
Health worker parents		0.672	**Household economic status**		0.828
Both	88 (8.54)		Low income	128 (12.4)	
Father	45 (4.36)		Middle income	393 (38.1)	
Mother	73 (7.08)		Upper-middle income	387 (37.5)	
None	824 (80)		High income	122 (11.8)	
Health worker relatives		*0.016*	**Mother's Education**		0.910
Grandfather/ Grandmother	26 (2.52)		Postgraduate	88 (8.54)	
Uncle / Aunt	307 (29.8)		Bachelor	291 (28.2)	
Brother / Sister	110 (10.6)		College / Vocational training	170 (16.5)	
None	587 (56.9)		High school / Junior high school	419 (40.6)	
			Primary school or below	62 (6.01)	
			Father's Education		0.347
			Postgraduate	96 (9.32)	
			Bachelor	504 (48.9)	
			College / Vocational training	97 (9.41)	
			High school/ Junior high school	301 (29.2)	
			Primary school or below	32 (3.10)	

Note:
**: T-Test*
SD: Standard Deviation

Table 2. Relationships between Factors and the Selection of Family Medicine among the Medical Students

No.	Independent variable	Univariate						Multivariate					
		FM as 1st choice		FM as 2nd choice		FM in top 3 choices		FM as 1st choice		FM as 2nd choice		FM in top 3 choices	
		OR	p-value	OR	p-value	OR	p-value	OR	p-value	OR	p-value	OR	p-value
1	Age	1.32	***0.007***	1.16	*0.115*	1.16	***0.011***	0.82	0.467	0.56	***0.03***	0.91	0.381
2	Year of program	2.10	***<0.001***	1.69	***<0.001***	1.39	***<0.001***	2.49	***0.005***	2.99	***<0.001***	1.51	***0.002***
3	Gender	1.31	0.377	0.69	*0.177*	1.17	0.307			0.59	0.074		
4	Parent in medical field	1.20	0.396	1.23	0.269	1.10	0.339						
5	Relatives in medical field	0.88	0.448	1.02	0.915	1.03	0.702						
6	Father education level	1.13	0.428	1.04	0.752	1.05	0.555						
7	Mother education level	1.05	0.747	1.4	***0.015***	1.08	0.316			0.69	***0.016***	-	
8	Estimated personal income	0.82	0.313	0.96	0.792	0.83	*0.057*					0.89	0.334
9	Economic status by house items	0.88	0.498	0.67	***0.021***	0.86	*0.122*			0.73	0.089	0.88	0.267
10	Family residency	0.41	0.377	0.3	0.232	0.52	*0.130*					0.45	0.082
11	Family influence	1.33	*0.078*	0.845	0.251	1.10	0.27	1.21	0.305				
12	Friend influence	1.32	*0.154*	1.27	*0.172*	1.12	0.266	1.24	0.373	1.30	0.213		
13	Community influence	0.17	0.367	1.21	*0.200*	1.01	0.896			1.10	0.579		
14	Experience from other trainers	0.89	0.553	1.04	0.828	0.86	*0.111*					0.94	0.56
15	Urban working incentives	0.65	***0.010***	0.81	*0.176*	0.81	***0.019***	0.66	***0.043***	0.92	0.643	0.95	0.675
16	Remote incentives	1.24	*0.147*	1.17	0.215	1.15	*0.061*					1.26	***0.008***
17	Income	0.83	0.387	1.07	0.738	0.92	0.454						
18	Social prestige	0.82	0.244	0.76	*0.067*	0.84	***0.042***			0.73	0.077	0.94	0.543
19	Clinical prestige	0.83	0.25	0.96	0.755	0.83	***0.029***					0.92	0.416
20	Overhead expenses	1.09	0.63	0.86	0.305	0.06	*0.079*					0.98	0.856
21	Duration of care	1.00	0.992	1.31	*0.103*	0.98	0.795			1.31	0.103	-	
22	Postgrad training time	0.90	0.514	0.88	0.351	0.83	***0.023***					0.82 (0.6790-1.0002)	0.05
23	Chance of urgent medical issues	0.74	*0.071*	1.11	0.498	0.9	0.247	0.84	0.466				
24	Chance to solve challenging cases	0.74	*0.081*	0.18	0.470	0.92	0.362	0.87	0.596				

25	Perceived intellectual content	0.53	***0.001***	1.17	0.600	0.68	***0.001***	0.55	***0.005***			0.81	0.191
26	Opportunity for research	0.84	0.297	0.94	0.698	0.88	*0.149*					0.99	0.938
27	Achieving procedural skills	0.96	0.831	1.03	0.843	0.95	0.636						
28	Mastering a small set of skill	0.53	***0.002***	0.70	*0.072*	0.56	***<0.001***	0.49	***0.028***	0.67	0.124	0.52	***<0.001***
29	Deal with a variety of medical problem	1.53	*0.051*	1.25	*0.196*	1.22	***0.047***	3.77	***<0.001***	1.61	***0.03***	1.97	***<0.001***
30	Wide range of skills & knowledge	1.30	0.248	1.11	0.585	0.98	0.871						
31	Communication skill	0.91	0.664	0.97	0.890	0.97	0.819						
32	Opportunity to teach	1.15	0.399	1.03	0.834	0.96	0.579						
33	Perceived talent-matched discipline	0.96	0.819	1.01	0.948	0.89	0.228						
34	Perceived personality compatible discipline	0.81	0.355	0.75	*0.142*	0.81	*0.083*			0.76	0.215	1.00	0.978
35	Early exposure to discipline	0.72	*0.064*	0.96	0.834	0.79	***0.012***	0.95	0.811			0.94	0.631
36	Job assigning	1.08	0.683	0.84	*0.200*	0.85	*0.059*			0.91	0.547	0.86	0.154
37	Clinical job opportunity	0.93	0.717	0.84	0.313	0.84	*0.088*					1.11	0.480
38	Promotion opportunity	0.74	*0.078*	0.76	*0.066*	0.77	***0.005***	0.75	0.159	0.60	***0.01***	0.84	0.170
39	Family needs	1.09	0.621	1.14	0.407	1.09	0.367						
40	Social needs	1.18	0.384	1.30	*0.112*	1.00	1.000			1.61	***0.019***		