Original Research

Career preferences among the internees and postgraduate trainees at National Institute of Homoeopathy, India

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Abstract

Background: Medical students' career choices are important to understand because those are the key determinants of the medical workforce, but such studies are sparse in homoeopathy. The purpose of this survey at National Institute of Homoeopathy (NIH) was to recognize the most preferable career options of the internees and post graduate trainees (PGTs) and to identify the influential factors behind career choice and future practice location.

Methods: A cross-sectional survey was carried out at NIH involving a sample of 123 respondents (internees: 44, PGTs: 79) during June-July 2018. A pre-tested, self-administered questionnaire was used. Forward stepwise multiple linear regressions were used to identify which factors were independently associated with choice of practice locations in future. Responses obtained from a list of probable factors influencing career choice were subsequently subjected to exploratory principal component analysis using promax rotation and Kaiser normalization, thus allowing calculation of z-score (standard score) of each identified factor and those were plotted on a cobweb chart to visualize characteristic profiles.

Results: Location of teaching hospital appeared as the sole significantly influencing factor behind choice of practice location for the internees, but none in case of the PGTs. The most preferred career choices were Medical Officer, Private Practice, Teaching, and Research. While the internees mostly preferred the career of private practice, the PGTs opted for Medical Officer. Job availability appeared as the sole important factor influencing majority of the career choices.

Conclusion: What is valued in deciding a career varied between internees and PGTs. In order to ensure balanced workforce, apart from jobs, students should be encouraged adequately to adopt various other career options as well.

Keywords: Career preference; Homoeopathy; India

Introduction

Medical students' career choices are important to understand because those are the key determinants of the medical workforce and thus influence how, where, and when medical care will be delivered [1]. Medical education requires undergraduate students to study a wide range of medical subjects [2]. In conventional medicine, at undergraduate level, though medical careers remain undifferentiated; but during postgraduate training, they specialize in one specific subject [2]. Medical students can be seen as a relatively undifferentiated, multi-potent stem doctors' capable of entering any field of practice [3]. Their decisions about specialist training may be influenced by several factors. These factors are thought to include higher income, prestige, hospital-based practice [4], and experience during clinical postings, inspiration given by academic teaching faculty, working hours, and flexibility of working arrangements [5, 6]. Personal intelligence and career opportunities also play a role [6]. Besides the afore-mentioned factors, advice from family, friends, or practicing specialists may also influence students in deciding their future. In addition, personal life experiences, interest in community-based settings, and passion for providing continuous care to patients may also pave the way to choice. Studies on conventional medicine students focus some light on the factors having influence in their specialty choices, like demographics [7-9]; indebtedness [10-15]; career-related beliefs, values and attitudes [16-18]; personality profiles [2, 19]; academic performance [20]; non controllable lifestyle careers [21-23]; work-life balance [24, 25] etc. For future work distribution and healthcare program planning, medical students choices of career are important. However, the scenario remains somewhat under-evaluated in homeopathy in India. In a single existing paper on the specific career preferences of the undergraduates and new graduates of the four state Government homoeopathy colleges in West Bengal [26], the most frequently preferred career options were medical officers, private practitioners, researchers and lecturers respectively. The choice of future practice location was influenced significantly by 'experience at medical schools', 'advice from others', and 'considering future work conditions'.

At National Institute of Homoeopathy (NIH), there runs the Bachelor of Homoeopathic Medicine and Surgery (BHMS) course of 4.5 plus 1 year's duration and also stipendiary 3 years postgraduate course, i.e. Doctor of Medicine (Homoeopathy) [MD (Hom)] under The West Bengal University of Health Sciences with approval from the Central Council of Homeopathy, Government of India. The purpose of this survey was to recognize the most preferable career options of the internees and post graduate trainees (PGTs) and to identify the influential factors behind choice of career and their future practice location.

METHODS

Setting and design: A cross-sectional survey was carried out during June-July 2018 involving the internees and PGTs at NIH.

Sample size: Keeping the margin of error to accept as 5%, confidence level 95%, population size of 188 (internees plus PGTs), and response distribution assumed to be 53% [27], target sample size was 127.

Participants: Questionnaire was distributed among 188 internees and PGTs of which, 125 respondents participated in the survey (internees: 44, PGTs: 81) and returned the questionnaire. On account of having more than 50% missing values, two responses from the PGTs were discarded and 79 were taken into account. Overall, 123 responses were subjected to statistical analysis and response rate was 65%.

Questionnaire: A pre-tested, structured, self-administered questionnaire [26] was used. Primary version of the questionnaire was developed by Takeda et al, 2013 [1] and later modified from homoeopathic perspective by Koley et al [26]. Instructions on how to complete the questionnaire were provided along with the questionnaire. It took 10 minutes time to complete. The questionnaire consisted of four sections. The first section sought demographic details of the respondents. The second section comprised of 19 closed-ended questions, each with 4-points, from 'very important' (4) to 'not at all' (1) focusing on identifying the probable influential factors those deciding practice location of the survey respondents in future. The third section consisted of three closed-ended questions exploring the participants' career preferences and willingness to work in rural area. The fourth and the last section comprised of a set of 31 probable reasons influencing to choose a career. A 4-point agreement Likert scale (4: extremely well; 1: not at all) was provided to rate to what extent the attributes matched their reason for choosing their career options. No participant identifiable information was required, thus protecting privacy. In addition, the completed questionnaires were concealed inside opaque envelopes, were sealed at the survey site, collected by the research assistants and were sent for data analysis. Verbal consent was taken from all participants before administration of questionnaire. A reference number was allocated to every subject to ensure confidentiality, and to be used instead of name.

Statistical analysis plan: All responses were individually extracted in a specially designed Microsoft Excel spreadsheet and subjected to statistical analysis using SPSS®IBM® Inc., version 20 for Windows. Missing values were replaced by linear regression, multiple imputations and median values, as appropriate. Descriptive statistics were presented in the form of absolute numbers, percentages, means and standard deviations. Forward stepwise multiple linear regressions were subsequently used to identify which factors were independently associated with choice of practice locations in future. To adjust for multiple pair-wise comparisons, a 2-sided level of statistical significance was set at P less than 0.01 using a Bonferroni correction. Responses obtained from a list of probable factors influencing career choice were subjected to exploratory principal component analysis using promax rotation and Kaiser normalization, thus allowing calculation of z-score (standard score) of each identified factor. These z-scores were plotted on a cobweb chart to visualize characteristic profiles.

RESULTS

Respondents: The respondents accounted for 36% of internees and 64% of PGTs. Majority of the internees (75%) spanned 18-25 years of age whereas 90% of the PGTs belonged to the age group of 26 years and above. Male and female distribution was similar between the internees and PGTs. Rest of the identified features is furnished in table 1.

Choice of practice location: Descriptive statistics of importance of the variables influencing choice of future practice location is summarized in table 2. Forward stepwise multiple linear regressions identified "location of teaching hospital where internship will be completed" as the sole significantly influencing factor behind choice of practice location for the internees (β = 0.374, SE = 0.186, adjusted final model R^2 = 0.120, P = 0.012). In case of the PGTs, mixed responses were obtained and none of the suspected variables seemed to influence choice of practice location for the PGTs (adjusted final model R^2 = 0.078, P = 0.181; table3).

Table 1: Socio-demographic features of the respondents (N=123)

Features	Internee (n=44); n (%)	PGTs (n=79); n (%)
Age groups (yrs):		
▪ 18 – 25	33 (75)	8 (10)
▪ 26 and above	11 (25)	71 (90)
Gender:		
▪ Male : Female	21 (48) : 23 (52)	39 (49) : 40 (51)
Residence		
▪ Urban	21 (48)	48 (61)
▪ Semi-urban	13 (30)	11 (14)
▪ Rural	10 (22)	20 (25)
Marital status		
▪ Married : Single	3 (7) : 41 (93)	23 (29) : 56 (71)
Had experience before homoeopathy school	3 (7)	10 (13)
Went to college before homoeopathy school	6 (14)	19 (24)
Had undergraduate degree apart from homoeopathy	1 (2)	10 (13)
Had allopathy physician in family	17 (39)	26 (33)
Had AYUSH practitioner in family	8 (18)	22 (28)
Knew any physician closely before entering homoeopathy school	21 (48)	22 (28)
Perceived any physician as role model before entering homoeopathy school	21 (48)	29 (37)

Table 2: Descriptive statistics of variables influencing choice of future practice location (N=123)

Variables	Internees (n=44)		PGTs (n=79)	
	Mean	SD	Mean	SD
1. Own hometown	2.6	1.6	2.9	1.4
2. Hometown of partner	2.8	1.1	3.3	0.9
3. Parents' residence	2.3	1.1	2.8	1.0
4. Partner's career	2.7	1.0	3.2	0.9
5. Partner's preference	2.6	1.1	3.0	1.0
6. Educational environment for children	2.3	0.9	3.0	1.0
7. Location of your homoeopathy school	3.2	1.1	3.5	0.7
8. Location of teaching hospital where internship or post graduation will be completed(*)	2.4	1.2	2.5	1.0
9. Career development	2.1	1.2	2.5	0.9
10. Research environment	3.6	0.8	3.7	0.5
11. Teaching opportunities	3.4	0.8	3.2	0.8
12. Availability of nearby specialized hospitals for referrals	3.0	1.1	3.3	0.8
13. Availability of support from other doctors	3.4	0.9	3.4	0.7
14. Community atmosphere (temperament and characteristics of people)	3.1	0.9	3.2	0.8
15. Climate and/or natural environment	3.1	0.9	3.2	0.7
16. Lifestyle	2.9	1.0	2.9	0.9
17. Income	3.1	1.0	3.1	0.9
18. Possibility of inheriting practice of parents/relatives	3.4	0.9	3.5	0.7
19. Others	2.0	1.2	2.2	1.0

Table 3: Co-efficients of multiple regressions

Variables	B¶	SE	β¥	95% CI for B		P value
				LB	UB	
(Constant)	1.422	1.572	--	-1.723	4.567	0.369
2	-0.392	0.249	-0.242	-0.891	0.107	0.122
3	0.436	0.192	0.302	0.052	0.819	0.027
4	-0.142	0.244	-0.087	-0.631	0.347	0.564
5	-0.253	0.294	-0.169	-0.841	0.335	0.393
6	0.041	0.282	0.027	-0.523	0.605	0.885
7	0.193	0.359	0.090	-0.525	0.910	0.593
8	0.423	0.259	0.298	-0.096	0.941	0.108
9	-0.591	0.300	-0.385	-1.190	0.009	0.053
10	0.152	0.380	0.053	-0.608	0.911	0.691
11	0.215	0.247	0.117	-0.279	0.709	0.388
12	0.222	0.264	0.117	-0.307	0.751	0.405
13	0.253	0.337	0.118	-0.423	0.928	0.457
14	0.187	0.277	0.098	-0.367	0.742	0.502
15	0.056	0.252	0.029	-0.449	0.560	0.826
16	-0.347	0.237	-0.223	-0.820	0.126	0.148
17	0.364	0.256	0.230	-0.149	0.877	0.161
18	-0.311	0.246	-0.149	-0.803	0.180	0.210
19	-0.113	0.187	-0.075	-0.487	0.261	0.549

Variable 1 = Dependent variable; ¶ Unstandardized coefficient (B); ¥ Standardized coefficient (ß); SE = Standard Error; CI = Confidence Interval; LB = Lower Bound; UB = Upper Bound

Exploratory factor analysis: Extraction was performed using principal component method for determining how many factors best explained the observed covariation matrix within the data set. In order to decide the number of factors, a scree plot was generated. Eigen value was set to be greater than 1 and items having a factor loading less than 0.35 or showing a similar factor loading in more than 2 factors were excluded, then the factor analysis was repeated. We calculated the Cronbach's alpha coefficient for each factor to determine its scale reliability and calculated a mean score and standard deviation. The scree plot revealed high Eigen values for 6 factors. However, this curve was difficult to interpret because the curve began to tail off after the initial 6 factors, but there were subsequent drops until the final plateau was reached. (Fig. 1)

The achieved sample size seemed adequate for factor analysis as the average communalities after extraction was 0.640, much above the preferred cut-off of 0.5. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was 0.673 [chi-square:
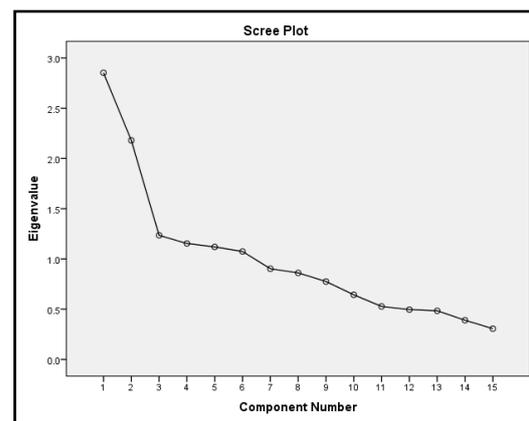

Fig. 1: Scree plot

322.547, df = 105, P < 0.001], much greater than the minimum Kaiser criterion of 0.5, indicating adequacy of the sample and compactness of correlation patterns. A significant Bartlett's test of sphericity indicated that the R-matrix was not an identity matrix. Next, the correlation matrix was scanned for values greater than 0.9 for identifying multi-co-linearity and singularity. Multicolinearity was not a problem for the data set. All items correlated fairly well and none of the correlation coefficients were particularly large. Factor analysis was performed using

promax rotation that yielded 3 domains and 3 individual factors. Two of the domains contained 4 factors within and another domain consisted of 2 factors. Five items were excluded due to floor effects, 2 items due to low factor loadings, 10 factors were excluded as those correlated with 2 factors to similar extents.

We defined the following 3 domains based on the types of items that grouped together:

Domain 1: Experience at homoeopathy school (factors 12, 13, 14 and 16)

Domain 2: Characteristics of homoeopathy (factors 1, 2, 6 and 7)

Domain 3: Advice from others (factors 19 and 22)

The other 3 items (3, 5 and 23) loaded separately and were considered as individual factors. (Table 4)

Table 4: Factor analysis of career preferences – component score coefficient matrix

Items and domains	Factors					
	I	II	III	IV	V	VI
Experience at homoeopathy school (α=0.77; 95% CI 0.69, 0.82)						
13_Received excellent teachings	**0.34**	0.01	-0.01	0.08	-0.01	-0.08
14_Comfortable atmosphere	**0.32**	-0.04	0.04	0.07	-0.15	-0.14
12_Memorable experience at class or rotatory internship	**0.29**	0.03	-0.06	-0.11	0.03	0.16
16_Encounter with role model prescriber	**0.26**	0.00	0.02	-0.05	-0.16	-0.14
Characteristics of homoeopathy (α=0.67; 95% CI 0.57, 0.76)						
6_Rewarding to keep evidence	0.02	**0.34**	0.01	-0.16	0.08	-0.02
1_Interest in clinical work	-0.01	**0.33**	0.15	0.04	-0.31	0.09
2_Interest in scientific aspects and modern technology	-0.00	**0.32**	-0.13	0.04	0.26	-0.12
7_Prospect for further development	-0.01	**0.32**	-0.01	0.08	-0.07	0.05
Advice from others (α=0.36; 95% CI 0.09, 0.55)						
22_Influence of friends	-0.01	-0.08	**0.62**	-0.10	0.06	0.05
19_Advice/expectation of parents	0.01	0.09	**0.48**	0.12	-0.08	-0.06
23_Job availability	0.03	0.01	0.04	**0.69**	0.04	-0.09
5_Interest in multispecialty	0.08	0.10	0.11	0.12	**0.46**	-0.10
3_Interest in teaching	0.03	0.01	0.04	-0.09	0.05	**0.69**

Excluded items from factor analysis because of;

Floor effect:

    10_Suffered from chronic illness and benefitted from multispecialty clinic

    11_Became interested before entering homoeopathy school

    17_Encounter with role model researcher

    18_Encounter with homoeopathy doctor who was a salaried private employee

    30_Risk of malpractice law suits

Low factor loading (<0.35)

    9_Suffered from chronic illness and benefitted from private practitioners

    27_Working hours

Correlation with two or more factors to the same extent:

    15_Encounter with role model teachers

    4_Interest in research or scientific aspects

    20_Advice from senior students

    21_Advice from teachers/consultants

    26_Expected income

    24_Ease of opening practice

    28_Attainable lifestyle

    29_Influence of future health care reform

    8_High respect of the chosen field in society

    25_Expectation to inherit practice of parent/relative

These six factors explained 64.1% of the variance in responses. We calculated Cronbach's alpha coefficiencies which demonstrated internal consistency that ranged between 0.36 and 0.77.

Characteristic profile of career preferences:

Preferred career choices were Medical Officer (n=48; 39.0%), Private Practice (n=39; 31.8%), Teaching (n=19; 15.4%), Research (n=11; 8.9%), and others (n=6; 4.9%). While the internees mostly preferred the career of private practice (n=19), the PGTs opted for the career of Medical Officer (n=34). After the factor analysis, in order to compare and contrast characteristic profiles of respondents considering one particular career preference, we grouped the data under internees and PGTs, and calculated the mean for each factor and the z-score (standard score) from the mean and standard deviation of all valid responses using the formula: $z = 50 + 10 \times (x - \mu) / \sigma$; where x = mean score of a factor among internees and PGTs who selected a single career option as the most probable career; μ = mean of the factor obtained from all valid response; and σ = standard deviation of the factor obtained from all valid responses. The internees and PGTs were classified into 5 groups according to the patterns of z score – private practice, research, teaching, medical officer and others.

Private practice: The z score of "advice from others" was higher in the internees than PGTs (fig. 2).

Research: The factor of "job availability" was slightly higher in the internees than PGTs (fig. 3).

Teaching: The factor of "interest in teaching" was slightly higher in the internees than PGTs (fig. 4).

Medical officer: The factor "characteristics of homoeopathy" was higher in internees whereas "job availability" was the most influencing factor among the PGTs (fig. 5).

Others: The factor of "job availability" was higher in the internees than PGTs, whereas the factor "characteristics of homoeopathy" was higher in PGTs than internees (fig. 6).

DISCUSSION

This cross-sectional survey was carried out at NIH involving a sample of 123 respondents (internees: 44, PGTs: 79) during June-July 2018 in order to recognize the most preferable career choices of the internees and PGTs and to identify the influential factors behind choice of career and their future practice location. A pre-tested, structured, self-administered questionnaire was used for this purpose. Forward stepwise multiple linear regressions identified "location of teaching hospital where internship will be completed" as the sole significantly influencing factor behind choice of practice location for the internees. In case of the PGTs, none of the suspected variables seemed to influence choice of practice location for the PGTs. The most preferred career choices were Medical Officer, Private Practice, Teaching, and Research. While the internees mostly preferred the career of private practice, the PGTs opted for the career of Medical Officer. Exploratory principal component analysis was carried out and 13 factors out of 31were shortlisted those were supposed to influence career choices of the respondents significantly. These were further subjected to calculation of z-score and were further plotted on cobweb charts. Choice of private practice was influenced by advices from others, Medical Officer by characteristics of homoeopathy and job availability, teaching by interest in teaching, and research by job availability. What is valued in deciding a career varies between internees and PGTs. Job availability seemed to appear as the sole important factor influencing majority of the career choices. In order to secure balanced workforce, apart from jobs, students should be encouraged adequately to adopt various other career options as well.
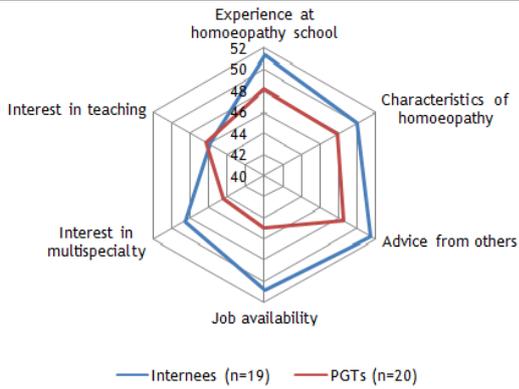
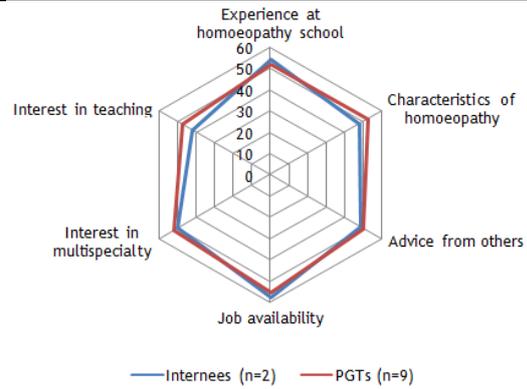Fig. 2: Career choice – Private Practice (n=39)

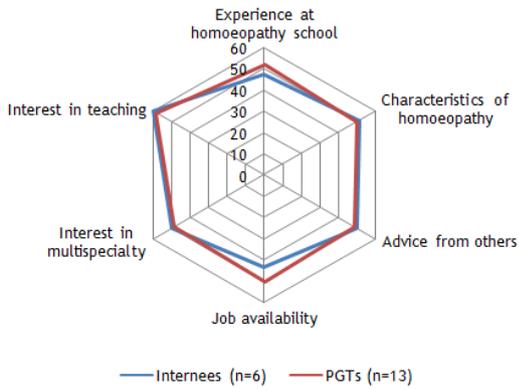Fig. 3: Career choice – Research (n=11)
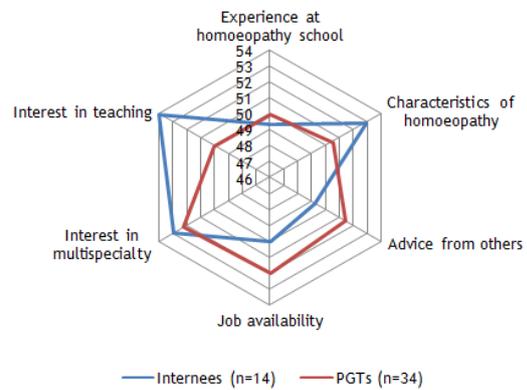

Fig. 4: Career choice – Teaching (n=19)

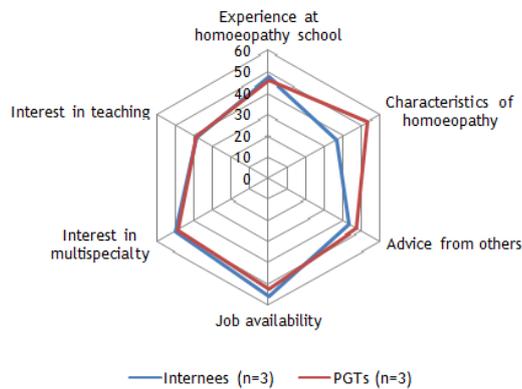Fig. 5: Career choice – Medical Officer (n=48)

Fig. 6: Career choice – Others (n=6)

It was the exact replica of the study conducted 4 years earlier in the state Government run homoeopathy institutions in West Bengal and the 2nd endeavor to assess the career perceptions of the respondents. However, as an inherent limitation of this cross-sectional study design, no causative conclusion could be inferred. The study was conducted at NIH only and thus the findings might be limited to NIH itself. Additionally, inevitable incorporation of central tendency bias and acquiescence bias arising from the use of Likert scale responses into the analysis could not be eliminated.

In the earlier survey, most frequently chosen career options were Medical Officer (32.7%), Private Practice (28.6%), Research (20.6%) and Teaching (13.7%) [26] – the figures are quite similar to this survey as well. In the earlier one, 'experience at medical schools', 'advice from others', and 'considering future work conditions' seemed to influence all the career choices significantly. These factors are somewhat different than this current study. Strikingly, teaching and research are repeatedly being identified as low preferred career options. The findings are in line with another published report that identified a compromised level of knowledge and attitude toward clinical research among the internees, new graduates and postgraduate trainees at NIH [27]. Further studies should aim at achieving larger sample size across India, so that the entire scenario can be unveiled and corrective measures can be implemented by the policy makers.

CONCLUSION

A cross-sectional survey was carried out at NIH involving 44 internees and 79 PGTs in order to recognize the most preferable career choices of the internees and PGTs and to identify the influential factors behind choice of career and their future practice location. Location of teaching hospital appeared as the sole significantly influencing factor behind choice of practice location for the internees, but none in case of the PGTs. The most preferred career choices were Medical Officer, Private Practice, Teaching, and Research. While the internees mostly preferred the career of private practice, the PGTs opted for the career of Medical Officer. Job availability seemed to appear as the sole important factor influencing majority of the career choices. In order to secure balanced workforce, apart from jobs, students should be encouraged adequately to adopt various other career options as well.

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