

Factors influencing study of physiotherapy and preferred choice of specialization among final year physiotherapy students in Nigeria

✉ Ayodeji Ayodele Fabunmi¹, ✉ Babafemi Olukunle Adebajo¹, ✉ Theresa Ogunayo Akinola²

¹ Department of Physiotherapy, College of Medicine, University of Ibadan, Nigeria

² Department of Physiotherapy, College of Health Sciences, Bowen University, Iwo, Osun State, Nigeria

ABSTRACT

Introduction: Over the years increasing number of students are seeking admission to study Physiotherapy in the universities leading to increased preference for specialization as compared with general practice. The aim of this study was to identify factors influencing the study of physiotherapy and preferred choice of specialization.

Material and Method: The research was a cross-sectional survey involving final year physiotherapy students in three training institutions in South-West, Nigeria. The questionnaire is in three sections (section A sought responses on Socio-demographic characteristics, section B on factors influencing the study of Physiotherapy and section C on preferred choice of specialization). Content validation was carried out to eliminate ambiguity and ensure that all items of the questionnaire are relevant and well understood. Descriptive statistics of percentages, bar chart and mean were used to summarize data on age, factors influencing study of physiotherapy, the level of influence of each factor on preferred specialization areas of each participant and the factors influencing the choice of specialization.

Result: There was a response rate of 72.2% and the mean age was 22.69±2.32 years. Out of the eight factors influencing study of physiotherapy, 'Desire to help people optimize their physical health and 'Personal interest' had the greatest influence with mean scores of 3.24 and 3.18 respectively. Ninety-eight participants (94.26%) were interested in pursuing postgraduate specialization in Physiotherapy. Orthopedics and Musculoskeletal physiotherapy is the most preferred specialization while Geriatrics is the least preferred specialization. Male students have preference for Sports while female have preference for Paediatric specialty.

Conclusion: Exposure to specialties in Physiotherapy like Geriatrics and Cardio-pulmonary may help improve interest in those areas and hence increased preference for those specialties.

Keywords: Physiotherapy study; choice of specialization; physiotherapy students

INTRODUCTION

Physiotherapy is concerned with identifying and maximizing quality of life and movement potential within the spheres of promotion, prevention, treatment/intervention, habilitation and rehabilitation (1). It constitutes one of the oldest and most prestigious components of a group of professionals referred to as Allied Health professionals (2).

Dating as far back as 3000 BC (3), the practice of physiotherapy has changed greatly. There has been a shift from the traditional emphasis on practice based on the opinion of authorities to an emphasis on data-based clinically relevant studies and research (4). Now universally acknowledged as an autonomous profession, physiotherapy enjoys a positive reputation and is generally well regarded by other health professionals and the general public (5).

Corresponding Author: Ayodeji Ayodele Fabunmi, Department of Physiotherapy, College of Medicine, University of Ibadan, Ibadan, Oyo State, Nigeria

E mail: aafabunmi@yahoo.com

Received: 10.10.2019 **Accepted:** 31.01.2020 **Doi:** 10.32322/jhsm.632717

Cite this article as: Fabunmi AA, Adebajo BO, Akinola TO. Factors influencing study of Physiotherapy and preferred choice of specialization among final year Physiotherapy Students in Nigeria. J Health Sci Med 2020; 3(2): 102-109.

Generally, Physiotherapy in Nigeria has undergone tremendous change since its introduction though it is not quite at par with the rest of the world yet (6). In the first three decades, it was viewed as a sub-profession with limited advancement opportunities in the civil service [6]. With the increased autonomy now associated with physiotherapy and broader knowledge of what it entails, the circumstances have improved greatly with physiotherapists serving greater roles in the health care sector.

In the area of physiotherapy education in Nigeria, what began as a 3-year program in 1966 at the University of Ibadan transitioned to a 5 year Bachelor of Physiotherapy degree program following curriculum upgrades in 1998 (7) with the possibility of obtaining a Master's degree at the post-graduate level and even a further doctoral degree in any of the available specialties. These specialties according to the Nigeria Society of Physiotherapy are Musculoskeletal and Orthopedic, Cardiorespiratory, Neurology, and Neurosurgery, Sports, Paediatrics and Women's Health. Also, with the introduction of the National Postgraduate Physiotherapy College of Nigeria, physiotherapists can now undergo residency training thus providing an opportunity for post-professional training along specialty lines.

Maduagwu et al. (8) in an article published in 2015 identified that a total of nine institutions offered physiotherapy, yet the number of practicing physiotherapists in Nigeria is still grossly inadequate to serve the enormous population. The Nigerian population is currently estimated to be about 178.5 million (9). Statistics from the Health Workforce Country Profile for Nigeria put the number of registered physiotherapists practicing within Nigeria whether in private or the public setting at 1473 (10). Compared to the global ratio of physiotherapists to patients which stands at 1:4000, this figure shows that there is still a gross deficiency in the number of physiotherapists graduating from the training institutions even though entrants into the profession have increased with the establishment of more training institutions.

While there is no existing literature detailing the areas of specialization of practicing physiotherapists in Nigeria based on post-graduate qualification, Ibikunle et al. (11) in a study carried out among physiotherapists found out that only 40% of the participants were interested in pursuing post-graduate specialization in physiotherapy. The choice of a career is a complex and multifaceted phenomenon influenced by both individual and contextual factors of structure and culture which enhance or construct one's social world (12). Given the current strength of physiotherapy manpower in Nigeria, it became necessary that an insight into the factors that influence the decision of students to study physiotherapy

as well as select their preferred area of specialization to be researched into. This may help identify individual and contextual factors of structure and culture influencing the study of physiotherapy and specialization in it so that policymakers, health educationist and other stakeholders can make the right decisions to ensure that manpower development for both basic and specialized physiotherapy care is continuously achieved.

MATERIAL AND METHOD

This research is a cross-sectional survey and a purposive sampling technique was used to recruit participants for this study.

Participants

Participants for this study were consenting final year physiotherapy students in all physiotherapy training institutions in the South Western region of Nigeria namely;

- a. University of Ibadan, Ibadan. Oyo State
- b. Obafemi Awolowo University, Ile Ife. Osun State
- c. University of Lagos, Lagos

Instruments

The questionnaire titled "Factors Affecting the Study of Physiotherapy and Preferred Choice of Specialisation among Final Year Physiotherapy Students in South-Western Nigeria" was used for data collection in this study. It was adapted from an earlier study by Folayan et al. (13). Domains relevant to the present study were identified in the original questionnaire and used for developing the questionnaire for this study. Adaptations made included a change of all terms referring to dentistry to that relevant to physiotherapy in the domains selected for development of this new questionnaire. The new questionnaire was given to 5 experts to ascertain that the content was adequate and relevant to this new study. Also, socio-demographic data on age were grouped and factors relevant to physiotherapy study have also been included. Five students were given the questionnaire to complete to be able to identify and correct ambiguity and ensure that all items of the questionnaire are relevant and well understood. The final questionnaire had two sections as shown below:

Reasons for studying physiotherapy were assessed. Participants were asked to rate from 0-5 each of the 8 alternatives to the degree to which any of the alternatives may have had an impact on their decision to study Physiotherapy. The alternatives were; Failure to be admitted to another program, perso-



Section A: This has 4 questions about the biodata of the participants, gender, age, profession of parent and institution.

SECTION A: Personal information

1. Sex: Male Female

2. Age (Years): 18-21 22-25 26-29 30 and above

3. Is any of your close relative a Physiotherapist? YES NO

IF YES, state which: Mother Father Sibling

Uncle Aunt Other

4. Training Institution

University of Ibadan

University of Lagos

Obafemi Awolowo University

This is the end of the Questionnaire.

Thank you for completing it

Section B: This part explored factors that may have contributed to the decision of individuals to or not to study physiotherapy.

SECTION B: Factors Influencing the Study of Physiotherapy

The following factors may have positively influenced your decision to study physiotherapy. Give a score from 1 to 5 to each of the factors, where 1 represents the factor that had the least influence on your decision and 5 represents a very influential factor (two or more alternatives can have same scores). Where not applicable, please tick under N/A.

S/N		N/A	1	2	3	4	5
5	Failure to be admitted to other programme						
6	Personal interest						
7	Parent's recommendation						
8	Friend's or relative's recommendation						
9	Possibility of receiving high remuneration						
10	Desire to help people optimise their physical health						
11	Opportunity of working in a hospital setting						
12	Opportunity to travel and work outside Nigeria						
If any other, please state and rate and rate in the space provided below							
13							
14							
15							

Section C: This section explored the area of specialization they would prefer in the future and the factors that influenced their decisions.

SECTION C: Preferred Choice of Specialization

16. Would you like to pursue further specialization in Physiotherapy in the form of Post-graduate studies. YES NO

If Yes, please select the area you are willing to specialize in by giving a score from 1 to 5,

Where 1 = least interest and 5= Highly interested. Please tick under NI if you have no interest in the specialty.

S/N	Specialty	NI	1	2	3	4	5
17	Cardiopulmonary						
18	Geriatrics						
19	Neurology and Neurosurgery						
20	Orthopedics and Musculoskeletal						
21	Paediatrics						
22	Sports						
23	Women's Health						
If any other, please state and rate and rate in the space provided below							
24							
25							
26							

nal interest, Parent's recommendation, Friends' or relatives' recommendation, Possibility of receiving high remuneration, Desire to help people optimize their physical health, Opportunity of working in a hospital setting, Opportunity to travel and work outside Nigeria. They were also asked to specify other factors that may have influenced their decision but which were not stated and to rank them. The mean score for each alternative was calculated to rank the motives. To facilitate comparison between sub-groups, scores 0 and 1 were categorized as no influence, 2 and 3 as minimal influence while 4 and 5 were categorized as strong influence.

A Yes/No question was posed to participants about their willingness to pursue further specialization in physiotherapy in the form of postgraduate studies. Participants who replied in the affirmative were then asked to indicate their level of interest in the 7 available fields by giving a score from 0-5. They were also asked to specify other fields they may be interested in but which were not stated. Scores 0 and 1 were classified as no interest, 2 and 3 as little interest while 4 and 5 were classified as high interest.

A further question was then posed on the most preferred choice of specialization. Participants who selected a particular field were then asked to rate the factors that may have influenced their decision by giving a score from 0-5 to each of the 7 alternatives to the degree to which any alternative may have had an impact. Room was given for participants to identify other factors that may have influenced their decision but which were not listed and to rank them. Scores 0, 1 and 2 were classified as low while 3, 4 and 5 were categorized as strong for each of the motives.

Ethical Declaration and Procedure for Data Collection

Ethical approval was obtained from the University of Ibadan/ University College Hospital (UI/UCH) Health Research Ethics Committee before the commencement of the study with number UI/EC/16/0207. Informed consent was obtained from prospective participants. Participants were informed about the confidentiality of their responses and their right to withdraw from the study should they decide such. Questionnaires were sent to contact persons in each of the

participating schools after their approval had been obtained. The contact persons following due training proceeded to collect the data and sent back the completed.

Out of 144 questionnaires distributed to participants, 104 (72.2%) were returned. The questionnaires were distributed to students in their classrooms and collected back after completing the questionnaires. The objective of study and voluntariness of participation was clearly stated in the informed consent form which was attached to the questionnaire.

Statistical Analysis

Descriptive statistics of mean and standard deviation were used to summarize data on age. Descriptive statistics of percentages, frequencies were used to present data on gender, institutions, factors influencing the study of physiotherapy, the level of influence of each motive, preferred areas of specialization of each participant and the factors influencing the choice of specialization.

RESULTS

One hundred and four students of the 144 eligible students filled and returned the questionnaire giving a response rate of 72.2% (104). There were 38 respondents (36.5%) from Obafemi Awolowo University, 23 (22.1%) from the University of Ibadan and 43 (41.3%) from the University of Lagos.

Socio-demographic Characteristics of Participants

Fifty-five participants were male (52.9%) while 49 were female (47.1%). The mean age of participants is 22.69±2.32 years. Thirty participants (28.8%) were aged 18-21, 65(62.5%) were aged 22-25, while 9(8.7%) participants were within age group 26-29. In the University of Ibadan, 9 (39.1%) participants were aged 18-21years, 13 (56.5%) were aged 22-25years while only 1 (4.3%) was aged 26-29years. 47.82% were males while 52.18% were females. In the University of Lagos, 15(34.9%) were aged 18-21, 60.5% were aged 22-25years while 2 (4.7%) were aged 26-29%. 39.53% were males while 60.47% were females. In Obafemi Awolowo University 71.5% of participants were males while



28.5% were females. 6 (15.8%) were aged 18-21, 26(68.4%) were aged 22-25years while 6 (15.8%) were aged 26-29years.

Fifteen (14.4%) participants had family or close relatives who are physiotherapists. Out of these 15, 4 had siblings who are physiotherapists, 4 had uncles who are physiotherapists, 3 had aunts who are physiotherapists, 1 had a mother who is a physiotherapist while 3 had one of the other relatives as a physiotherapist.

Factors Influencing the Study of Physiotherapy

Table 1 shows the distribution of factors that influence the choice of Physiotherapy as a course. The Desire to help people optimize their physical health had the strongest influence with a mean score of 3.24, followed by Personal interest with a mean score of 3.18 and the least motivating factor is Parents’ recommendation with a mean score of 1.73.

For the male and female participants, the desire to help people optimize their physical health had the strongest influence on choosing Physiotherapy as a course while parents recommendation had the weakest influence in the decision to study Physiotherapy as shown in **Table 2**. For females, personal interest had the strongest influence on their choice of studying Physiotherapy. For participants aged 18-21, failure to be admitted had the strongest influence on their choice of Physiotherapy as a course. For the ages 22-25 and 26-29, personal interest had the strongest influence in their choice of Physiotherapy as a course as shown in **Table 1,2**.

Table 1. Factors influencing the study of physiotherapy

Statements	Mean Scores	Frequency in percentage						
		0	1	2	3	4	5	
Failure to be admitted into other program	2.27	23.1	25.0	7.7	10.6	13.5	20.2	
Personal Interest	3.18	7.7	12.5	10.6	17.3	26.9	25	
Parents’ Recommendation	1.73	26.0	28.8	13.5	14.4	12.5	4.8	
Friend or Relatives recommendation	2.13	18.3	26.0	12.5	20.2	13.5	9.6	
Possibility of receiving high remuneration	2.19	23.1	19.2	9.6	19.2	21.2	7.7	
Desire to help people optimise their physical health	3.24	11.5	6.7	5.8	25.0	24.0	26.9	
Opportunity of working in a hospital setting	2.71	19.2	8.7	11.5	18.3	26.9	15.4	
Opportunity to travel and work outside Nigeria	2.57	17.3	21.2	6.7	16.3	19.2	19.2	

Table 2. Distribution of factors influencing the study of physiotherapy based on sex and age

Statements	Mean Scores				
	SEX		AGE		
	Male	Female	18-21	22-25	26-29
Failure to be admitted into other program	2.42	2.1	3.17	1.91	1.81
Personal Interest	3.02	3.37	2.47	3.42	3.89
Parents’ Recommendation	1.65	1.82	2.1	1.58	1.56
Friend or Relatives Recommendation	2.27	1.98	1.6	2.4	2.8
Possibility of receiving high remuneration	2.24	2.14	1.97	2.26	2.44
Desire to help people optimize their physical health	3.24	3.24	2.97	3.25	4.11
Opportunity of working in a hospital setting	2.71	2.71	2.67	2.69	3.00
Opportunity to travel and work outside Nigeria	2.73	2.39	2.47	2.6	2.67

Post-Graduate Specialization

Out of 104 students, only 6 (5.77%) were not interested in pursuing post-graduate specialization. **Table 3** shows the different areas participants are willing to specialize in and the extent to which they are interested in the specialties. In order of preference, Orthopedic and Musculoskeletal physiotherapy is the most preferred with a mean score of 3.35 followed by Sports physiotherapy. The least preferred area of specialty is Geriatrics with mean scores of 1.18.

In order of interest, male participants were willing to specialize in Sports (3.65), Orthopedics (3.33), Neurology and Neurosurgery (2.65), Cardiopulmonary (2.35), Paediatrics

Table 3. Preferred specialty areas and level of interest

Specialty	Mean	Level of Interest (in %)					
		0	1	2	3	4	5
Cardiopulmonary	1.88	37.5	13.5	8.7	18.3	7.7	14.4
Geriatrics	1.18	44.2	21.2	14.4	14.4	3.8	1.9
Neurology and Neurosurgery	2.39	26.9	11.5	9.6	16.3	18.3	17.3
Orthopedics and Musculoskeletal	3.35	14.4	5.8	4.8	18.3	19.2	37.5
Paediatrics	2.06	28.8	21.2	7.7	13.5	15.4	13.5
Sports	3.27	17.3	9.6	3.8	9.6	17.3	42.3
Women’s Health	1.55	39.4	23.1	6.7	16.3	2.9	11.5

Keys

- 0 – No Interest
- 1 – Hardly interested
- 2 – Just interested
- 3 – Moderately interested
- 4 - Very interested
- 5 - Totally interested

Table 4. Distribution showing preferred specialty areas and level of interest based on age and sex

Statements	MEAN SCORE				
	SEX		AGE		
	Male	Female	18-21	22-25	26-29
Cardiopulmonary	2.35	1.37	1.91	1.74	2.67
Geriatrics	1.38	0.96	1.22	1.11	1.67
Neurology and Neurosurgery	2.65	2.10	2.67	2.28	2.33
Orthopedics and Musculo skeletal	3.33	3.37	3.47	3.34	3.0
Paediatrics	1.6	2.57	1.93	2.06	2.44
Sports	3.65	2.84	3.23	3.42	2.33
Women's Health	1.22	1.97	1.5	1.46	2.33

(1.6), Geriatrics (1.38) and Women's Health (1.22). For female participants, their choices in order were Orthopedics (3.37), Sports (2.84), Paediatrics (2.57), Neurology and Neurosurgery (2.10), Women's Health (1.97), Cardiopulmonary (1.37) and Geriatrics (0.98) as shown in Table 4. For participants aged 18-21, the choice of specialization in order of interest was as follows; Orthopedics and musculoskeletal (3.47) with the highest mean score and geriatrics (1.2) is with the lowest mean score. For those aged 22-25, they were Sports (3.42), Orthopedics (3.34), Neurology and Neurosurgery (2.28), Paediatrics (2.06), Cardiopulmonary (1.74), Women's Health (1.46) and Geriatrics (1.11). For those aged 26-29, Orthopedics ranked highest with a mean score of 3.0 followed by Cardiopulmonary (2.67), Paediatrics (2.44), Sports, Women's Health and Neurology and Neurosurgery (all 2.33) and Geriatrics with 1.67 (Table 4).

Preferred Choice of specialization

8 participants (7.7%) chose Cardiopulmonary, 13(12.5%) chose Neurology and Neurosurgery, 34 (32.7%) chose Orthopedics, 9 (8.7%) chose Paediatrics, 14(13.5%) chose Sports physiotherapy while 5(4.8%) chose Women's Health as their preferred area of specialization. 19(18.3%) were undecided while 2(1.9%) identified some other unspecified area as their preferred choice of specialization as shown.

DISCUSSION

This study evaluated the motivations and career choices among final year physiotherapy undergraduates in different training institutions in the South Western part of Nigeria. Final year students were selected because previous reports have demonstrated that senior students provide more realistic answers regarding their motivation in choosing their course of study (14). Also, it is expected that final year students would have had enough exposure to the practice of physiotherapy to be able to make informed decisions

about current and future prospects. A considerable number of studies have previously evaluated factors that led to studying medicine, dentistry, nursing, pharmacy and other health-related professions around the world.

In line with Odebiyi and Adegoke (15), it was observed that generally more males than females will be graduated from the University of Ibadan, Lagos and Obafemi Awolowo University thus leading to a higher proportion of males in the profession. Findings about age distribution were considerably lower than the 25.9±13.21 years identified by Ibikunle et al. (11) in a similar study. This may be due to the difference in the population of studies as the previous study was conducted in a South Eastern university in Nigeria.

The first aim of the study was to identify the factors influencing the study of physiotherapy among students in their final year of study in physiotherapy schools in South-Western Nigeria. The results showed that the three top reasons for the study of Physiotherapy in South-Western Nigeria are 'Desire to help people optimize their physical health', 'Personal interest', 'Opportunity to work in a hospital setting'. These findings were partly in agreement with those of Mulnar et al. (16) and Puljak et al. (17) who reported that motivations and personal interest are the major factors that drive students toward medicine. Recommendation by parents, friends' or relatives who were physiotherapists did not play a major role. This is a variant with another finding by Ibikunle et al. (11) that the majority of those studying physiotherapy were influenced to do so by physiotherapists.

The outcome of identifying preferred specialization areas of physiotherapy by students in their final year of study in physiotherapy schools in South Western Nigeria showed that majority of the participants (94.26%) were interested in pursuing post-graduate specialization which is in line with findings throughout the literature (18-20). As regards age, the older final year physiotherapy students' choice was more influenced by personal interest showing that they are actually more mature. There was however a difference with regards to gender. Females were more willing to specialize in Paediatrics than their male counterparts. This is consistent with findings by Nancy et al. (21) that more females than males tend to be interested in Paediatrics related practice.

The most preferred specialization across schools is Orthopedics and Musculoskeletal Physiotherapy. This is in line with findings in several literatures that the majority of physiotherapy students wished to specialize in Musculoskeletal physiotherapy. Students were least interested in Geriatrics. This mirrors findings in a study by Fitzgerald et al, (22) that medical students generally exhibit low interest towards geriatric medicine. This has often been associated with limited knowledge about aging and older adults and limited exposure to caring for them. One way to improve this would be to provide more of such experiences to care for the older ones during training.



CONCLUSION

Based on the outcomes of the study, one can conclude that more males than females will graduate and join the existing physiotherapy workforce thus continuing the trend of a male dominated profession. Factors influencing the study of physiotherapy were more work-related than personal hence anything done to improve the prestige of the profession and also increase awareness about the profession will likely culminate in an increase in entrants into the profession. Interest in a specialty like cardiopulmonary and geriatrics can be stimulated by increasing knowledge and allowing students more exposure to the specialties during their clinical training program.

FINANCIAL SUPPORT AND RELATIONSHIP

There is no person/organization to support the work financially and the authors have no conflict of interest.

REFERENCES

- World Confederation for Physical Therapy, updated: May 21; 2016. <https://www.wcpt.org/policy/ps-descriptionPT>,
- Health Professionals Council of Australia, updated: June 15; 2002. https://sarrah.org.au/sites/default/files/docs/future_physio.pdf
- Moffat M. A history of physical therapy education around the world. *J Phys Ther Educ* 2012; 26: 13-23.
- Akinbo S, Odebiyi D, Okunola T, Aderoba O. Evidence Based Practice: Knowledge, Attitude and Beliefs of Physiotherapists in Nigeria. *The Internet J Med Inform* 2008; 4: 1-8.
- Struber JC. Physiotherapy in Australia- Where to Now? *Int J Allied Health Sci and Prac* 2003; 1: 1-5.
- Oyeyemi A. Fifty years of physiotherapy in Nigeria: trends, perspectives and future direction. *J Nigeria Society Physio* 2009; 17: 31-2.
- John EB, Pfalzer LA, Fry D, et al. Establishing and Upgrading Physical Therapist Education in developing Countries: four case Examples of Service by Japan and United States Physical Therapists Programs to Nigeria, Suriname, Mongolia and Jordan. *J Phys Ther Educ* 2012; 26: 29-39.
- Maduagwu SM, Sokunbi GO, Jaiyeola OA, Shuaibu I, Maduagwu BC, Ojiakor AC. Knowledge of effect of exercise on HIV infected persons among physiotherapy students in Nigeria. *J AIDS and HIV Res* 2015; 7: 91-6.
- National Population Commission of Nigeria, updated: August 24; 2016. <https://dhsprogram.com/pubs/pdf/FR293/FR293.pdf>
- World Health Organisation, African Region, updated: December 21; 2016. https://www.afro.who.int/sites/default/files/2018-03/9789290232612_0_0.pdf
- Ibikunle PO, Kalu ME, Useh U. Professional motivation and plan amongst graduating Nigerian physiotherapy students. *J Human Ecol* 2013; 44: 203- 6.
- Ozbilgin M, Kusku F, Erdogmus N. Explaining influences on career choice: the case of MBA students in comparative perspective. *J Human Resource Manag* 2005; 16: 2000-28.
- Folayan MO, Sofola OO, Khami MR, et al. Study motives, career choices and interest in paediatric dentistry among final year dental students in Nigeria. *BMC Med Educ* 2014; 14:130.
- Gallagher W, Clarke W, Wilson N. Understanding the motivation: a qualitative study of the dental students' choice of professional career. *Euro J Dental Edu* 2007; 12: 89-98.
- Odebiyi DO, Adegoke BOA. Gender distribution of physiotherapy graduates from Nigerian Universities. *J Nig Soc Physio* 2005; 15: 45-7.
- Mulnár R, Nyári T, Hazag A, Csinády A, Molnár P. Career choice motivations of medical students and some characteristics of the decision process in Hungary. *Central Eur J Med* 2008; 3: 494-502.
- Puljak L, Kraljevic JB, Latas VB, Sapunar D. Demographics and motives of medical school applicants in Croatia. *Med Teacher* 2007; 29: e227–e234.
- Adam PS, Natasha P, Adamson SM, Thuy B. Specialisation training in Malawi: a qualitative study on the perspectives of medical students graduating from the University of Malawi, College of Medicine. *BMC Med Edu* 2014; 14: 2.
- Khami MR, Murtomaa H, Jafarian M, Vehkalahti MM, Virtanen JI. Study motives and career choices of Iranian dental students. *Med Prin and Prac* 2008; 17: 221- 6.
- Hallssey J, Hannigan A, Ray N. Reasons for choosing dentistry as a career- a survey of dental students attending a dental school in Ireland during 1998-1999. *Eur J Dent Edu* 2000; 4: 77-81.
- Nancy DS, William C, Stephen RD, et al. Gender and generational influences on the paediatric workforce and practice. *Paediatrics* 2014; 133: 6.
- Fitzgerald L, Ferli E, McGivern G, Buchanan D. Distributed leadership patterns and service improvement: evidence and argument from English healthcare. *Leadership Quart* 2003; 24: 227.