

Medical Undergraduates' Attitude and Perceptions About Choosing a Career in Basic Sciences

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ABSTRACT

Background: There is lack of awareness among medical students regarding career prospects in basic medical sciences. Also, they are not encouraged to pursue such career. **Objective:** To identify characteristics that affect a student's decision to pursue a career in basic sciences. **Study Design:** Cross-sectional study. **Settings:** Aziz Fatimah medical and dental college, Faisalabad Pakistan. **Duration:** Four months from August 16, 2022 to December 16, 2022. **Methods:** A sample size of 230 was taken. About 46 students were taken from every class from 1st-5th year. Medical undergraduate students who gave consent were included. A validated questionnaire titled "To evaluate medical and dental students and graduates' inclination towards Basic Sciences as a future career option" was used. The data was analysed using IBM SPSS Statistics Version 25. Frequencies and percentages were calculated. Chi-square test of significance was applied. P-value less than 0.05 was considered as statistically significant. **Results:** About 76 participants (33%) showed their interest in pursuing career in basic sciences while majority of them were either not sure about this or they don't want to pursue career in basic sciences. Most important reason for choosing basic sciences were liking a particular subject (32, 13.9%) followed by better balance between work and life (20, 8.7%). While, most important reasons for not choosing basic sciences were they want to become clinicians (85, 37%) followed by no interest in teaching job (22, 9.6%). **Conclusion:** There is lack of motivation and awareness among medical students regarding career prospects in basic sciences.

Keywords: Career, Choice, Medical, Parents.

INTRODUCTION

A variety of initially biological, but more recently including behavioural and social, disciplines that lay the groundwork for knowledge needed for medical treatment are referred to as "basic sciences." "Basic sciences," are a vital part of the majority of the medical curriculum since they deal with the biological foundations of the human body, illness, and related remedies.¹

Knowledge of fundamental scientific concepts can help remember information, and comprehension of illness causing systems improves the precision of diagnostic

formulation. Additionally, this material offers a compelling framework to which diagnostic data may be added to enhance comprehension of pathophysiology, which could aid students in recalling or reconstructing an illness's symptoms. Basic scientific knowledge is a requirement for enhancing initial learning and for clinical medical knowledge.²

Medical students' consideration of specialties is a contentious topic since it has an impact on a number of crucial factors that influence how health care is rendered.³ For some medical students, selecting a medical specialty can be a challenging and complicated process; for others, it comes more naturally. One's decision about inspiration

and rationale for selecting a certain medical discipline is influenced by a variety of variables.⁴ There are several motivations and elements that come together to influence the ultimate decision, whether one choose a certain discipline as a consequence of recommendations from friends or family, admiration from a particular mentor, or true enthusiasm for the field.⁵ Despite the fact that motives differ by specialization, they may involve lifestyle preferences, the potential of private clinics, an interest in certain illnesses, a wide range of discipline options, an interest in teaching and research or the desire to earn more money.⁶ Students' professional choices and goals are typically influenced by their family and teachers and also by their own capacity to recognize their intended career path.⁷

To the best of our knowledge, no research has observed and analysed the career decisions of medical students in Faisalabad city, particularly in the basic sciences. So, in order to identify characteristics that affect a student's decision to pursue a career in basic sciences, we performed the current study. In order to achieve this goal, we developed a questionnaire for medical students that would help us understand how they are considering a future in the basic sciences and the variables that may have impacted their choice.

METHODS

This cross-sectional study was conducted in a private medical college of Faisalabad. Ethical approval was taken from institutional ethical review committee with approval letter number i.e. IEC/184-22. Study duration was 4 months. Data was collected from medical students. A sample size of 230 was taken using formula $n = \frac{Npq}{d^2/1.962(N-1)+pq} = 230$ where n=sample size, deff=design effect, N=population size =550. Quota sampling technique was used for collection of study participants. About 46 students was taken from every class from 1st-5th year. Among 46 students, 23 were males and 23 were females. The inclusion criteria included medical undergraduate students and who gave consent. Pilot testing of questionnaire was done using 5% of the anticipated sample size. Time required to complete the questionnaire was 10 min. A validated questionnaire of previous studies after taking author consent titled "To evaluate medical and dental students and graduates' inclination towards Basic Sciences as a future career option" was used. The questionnaire was distributed online as google form and data was collected and then transferred to SPSS where it was analysed using IBM SPSS Statistics Version 25. Frequencies and percentages were calculated. Chi-square test of significance was applied. P-value less than 0.05 was considered as statistically significant.

RESULTS

Table 1: Attributes of participants

Demographics		N	%
Age group	< 21 years	101	43.9%
	> 21 years	129	56.1%
Gender	Male	115	50.0%
	Female	115	50.0%
Current educational level	1st year	46	20.0%
	2nd year	46	20.0%
	3rd year	46	20.0%
	4th year	46	20.0%
	5th year	46	20.0%
Any one among family members in basic sciences	Yes	83	36.1%
	No	147	63.9%
Permanent residence	Urban	168	73.0%
	Rural	62	27.0%
Day-scholar or hostelite	day-scholar	155	67.4%
	hostelite	75	32.6%
Parents monthly income	Below 1 lac	47	20.4%
	1 - 1.5 lacs	68	29.6%
	1.5 - 2 lacs	47	20.4%
	> 2 lacs	68	29.6%

About 76 participants (33%) showed their interest in pursuing career in basic sciences while majority of them were either not sure about this or they don't want to pursue career in basic sciences. Most important reason for choosing basic sciences were liking a particular subject followed by better balance between work and life. While, most important reasons for not choosing basic sciences were they want to become clinicians followed by no interest in teaching job, as shown in table 2.

Table 2: Participants interest in basic sciences and reasons for it

Variables		N	%
Are you interested and want to pursue your career in Basic sciences	Yes	76	33.0
	No	98	42.6
	Not sure	56	24.3
Most suitable reason for choosing yes	Better balance between work and life	20	8.7
	Better working place/environment and/or working hours	12	5.2
	I am interested in teaching and/or non-clinical job	12	5.2
	I like a particular subject and want to pursue career in it	32	13.9
Most suitable reason for not choosing basic sciences	Basic sciences won't pay me enough	7	3
	Family/peer pressures	8	3.5
	I am not interested in a teaching job	22	9.6
	I am not interested in basic sciences or research	17	7.4
	I entered medical college to become a clinical practitioner	85	37
	No particular reason	15	6.5

While comparing association between different variables and interest in basic sciences, being 'day scholar or hostelite' and 'and anyone among family members from

basic sciences' showed significant p values (<0.05) as shown in table 3.

Table 3: Comparison between participants' interest in basic sciences and variables

Variables		Yes	No	Not sure	P value
Gender	Male	46 (40%)	41 (35.7%)	28 (24.3%)	0.05
	Female	30 (26.1%)	57 (49.6%)	28 (24.3%)	
Age group	< 21 years	28 (27.7%)	43 (42.6%)	30 (29.7%)	0.16
	> 21 years	48 (37.2%)	55 (42.6%)	26 (20.2%)	
Educational level	1 st year	14 (30.4%)	20 (43.5%)	12 (26.1%)	0.169
	2 nd year	11 (23.9%)	22 (47.8%)	13 (28.3%)	
	3 rd year	14 (30.4%)	18 (39.1%)	14 (30.4%)	
	4 th year	13 (28.3%)	23 (50%)	10 (21.7%)	
	5 th year	24 (52.2%)	15 (32.6%)	7 (15.2%)	
Any one among family members in basic sciences	Yes	41 (49.4%)	23 (27.7%)	19 (22.9%)	0.00
	No	35 (23.8%)	75 (51%)	37 (25.2%)	
Permanent residence	Urban	52 (31%)	75 (44.6%)	41 (24%)	0.489
	Rural	24 (38.7%)	23 (37.1%)	15 (24.2%)	
Day-scholar or hostelite	Day scholar	48 (31%)	76 (49%)	31 (20%)	0.012
	Hostelite	28 (37.3%)	22 (29.3%)	25 (33.3%)	

Participants attitude and perceptions towards basic sciences were assessed on a 5-point Likert scale. Participants 'strongly agree' on 3 points were: 'There is a lack of motivation to pursue career in basic sciences because of no patient interaction and little use of medical

training'; 'Basic sciences has increased understanding of medicine and has an immense effect on clinical practice'; 'There is lack of awareness amongst medical students regarding basic science as career option' as shown in table 4.

Table 4: Participants' attitudes and perceptions towards Basic sciences

Variables	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Basic sciences has increased understanding of medicine and has an immense effect on clinical practice	45 (19.6%)	82 (35.7%)	48 (20.9%)	22 (9.6%)	33 (14.3%)
Importance of Basic sciences and its career perspectives should be enlightened during medical school	36 (15.7%)	97 (42.2%)	47 (20.4%)	24 (10.4%)	26 (11.3%)
There is lack of awareness amongst medical students regarding basic science as career option	44 (19.1%)	75 (32.6%)	61 (26.5%)	29 (12.6%)	21 (9.1%)
There are limited post-graduation or employment options in basic sciences	29 (12.6%)	59 (25.7%)	77 (33.5%)	40 (17.4%)	25 (10.9%)
There is a lack of motivation to pursue career in basic sciences because of no patient interaction and little use of medical training	46 (20%)	80 (34.8%)	52 (22.6%)	29 (12.6%)	23 (10%)
Basic sciences field is not as well recognized and not given enough importance as clinical	35 (15.2%)	79 (34.3%)	59 (25.7%)	34 (14.8%)	23 (10%)
There is a lack of encouragement for pursuing basic sciences by teachers and medical community	28 (12.2%)	91 (39.6%)	56 (24.3%)	34 (14.8%)	21 (9.1%)
Pressure from family and society makes most students choose clinical career path	31 (13.5%)	69 (30%)	57 (24.8%)	37 (16.1%)	36 (15.7%)

Different factors were identified after literature review which affects participants preferences towards any speciality. The most chosen ones identified were hours of

practice (83.9%), interaction with physicians (82.6%) and flexibility (81.7%) as shown in table 5.

Table 5: Factors in formulating participants' speciality preferences

Variables	Yes	No
Hours of practice	193 (83.9%)	37 (16.1%)
Flexibility of speciality	188 (81.7%)	42 (18.3%)
Interaction with physicians	190 (82.6%)	40 (17.4%)
Specialty reputation	186 (80.9%)	44 (19.1%)
Duration of residency program	164 (71.3%)	66 (28.7%)
Work pressure	152 (66.1%)	78 (33.9%)
Interest in long term relations with patients	142 (61.7%)	88 (38.3%)
Physician patient interaction	179 (77.8%)	51 (22.2%)
Anticipated income	172 (74.8%)	57 (24.8%)
Focus on urgent care	169 (73.5%)	61 (26.5%)
Intellectual content of the speciality	183 (79.6%)	47 (20.4%)
Individuals competencies	179 (77.8%)	51 (22.2%)
Advice from faculty	156 (67.8%)	74 (32.2%)
Advice from friends	154 (67%)	76 (33%)
Advice from parents	183 (79.6%)	47 (20.4%)
Advice from practicing physicians	180 (78.3%)	50 (21.7%)

DISCUSSION

The study results revealed that only about one third of participants were interested in pursuing career in basic sciences. Major reason of choosing this was about liking a particular subject and main reason of not choosing was they entered medical college to become physicians or surgeons. These results are in contrast to a study conducted in Karachi where more than one-third of participants were interested in basic sciences, major reason of choosing basic sciences was better balance between work and life while main reason of not pursuing career in basic sciences was same as in our study.⁸ Similarly, a study conducted in Riyadh, Saudi Arabia showed that major reason for not choosing basic sciences as a career option was because of the fact that they were focussed on becoming physicians only while joining medical college which is similar to the result of our study.⁹ Another study conducted by Adera Getu AA *et al* showed that only 2.5% participants were interested in basic sciences as a career option.¹⁰ A study conducted by Yathish TR *et al* showed that about more than three-fourth of students were not interested in choosing basic sciences because of multiple reasons including less career prospects, promotion opportunities, academic advancement, and financial benefits.¹¹

Most important factors in formulating speciality preferences i.e. either clinical or basics in our study were hours of practice, flexibility of speciality and interaction with physicians, but a study conducted by Mann-Isah NA *et al* showed contrasting results where important factors were interest in that field and influence of family and friends.¹² Another study conducted by Gutiérrez-Cirlos *et al* showed that medical students choice of speciality were influenced by their experience during undergraduate studies.¹³ A study conducted by Jabeen A *et al* showed that capability, mental wellbeing, and a deeper grasp of the discipline were the main variables determining the decision of speciality.¹⁴ A study conducted by Alshahrani M *et al* showed that lifestyle was the significant factor among medical students regarding decision about their future speciality¹⁵ rather than hours of practice, or other factors as in our study. A study done by Alawad AA *et al* showed that less than 5% of medical students chose basic sciences as career option while most important reason regarding their speciality chosen was personal interest and how much it will be helpful to community¹⁶ which is in contrast to the results of our study.

One of this study's strongest points was the substantial number of medical students who were included, which may be related in part to the fact that we used simple, quick-to-complete questionnaires. Additionally, to the best of our knowledge, this is one of the first studies to examine the medical students interest in basic sciences. Our findings could suggest on a large scale that there should be some balance in basic and clinical sciences career options because majority of the students wanted to pursue career in clinical sciences but basic sciences importance cannot be neglected because basic sciences are the key to understanding clinical sciences.

CONCLUSION

This study examined the medical students' interest in pursuing career in basic sciences which concluded that about one-third of participants showed their interest in pursuing career in basic sciences while majority of them were either not sure about this or they don't want to pursue career in basic sciences. Most important reason for choosing basic sciences were liking a particular subject followed by better balance between work and life.

LIMITATIONS

Because this was a cross - sectional study, a causal relationship could not be established. Also, the findings from a single private medical college may not be representative of other medical colleges, including public institutions or those in different regions or countries. This limits the ability to generalize the results to a broader population.

SUGGESTIONS / RECOMMENDATIONS

Medical students should be encouraged by faculty members regarding career prospects in basic sciences. Their career counselling and motivation should be done. Also, there is lack of post-graduation and employment opportunities in basic sciences which higher authorities should notice and instructions should be given to all concerned regarding fulfilment of basic sciences faculty criteria as per PMC/PMDC guidelines to ensure more employment opportunities.

CONFLICT OF INTEREST / DISCLOSURE

None.

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