



April 2017

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## Recommended Citation

Ghanchi, N. K., Nizamuddin, R. N., Qasim, A., Khaled, Z. N., Raheem, A. B., Ali, N., Kayani, N., Beg, M. A. (2017). Perception of pathology as a future career choice among medical students from Karachi, Pakistan: experience from a private medical school.. *Journal of the Pakistan Medical Association*, 67(4), 627-629.

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## Perception of pathology as a future career choice among medical Students from Karachi, Pakistan: Experience from a private medical school

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### Abstract

To determine the perception of pathology as a future career choice among medical students of a private medical school from Karachi, Pakistan.

A descriptive cross-sectional study was conducted at the Aga Khan University, Karachi, Pakistan. A total of 201 students participated in this study. All Students were approached randomly to participate.

A total of 201 students participant survey forms were evaluated in this study. The overall satisfaction level with pathology was observed in 61.8% of the students. Majority of the students understood subspecialties which were a part of clinical medicine. Over half of the students thought pathology as a specialty should be highlighted in a more integrated manner (59.2%) with a minority favouring a separate pathology rotation (11.9%).

In conclusion, this study indicates that majority of students have a positive approach towards the field of pathology and favour incorporating it in an integrative way into the medical school curriculum.

**Keywords:** Pathology, Medical graduates, Career choice.

### Introduction

Pathology practices play a vital role in patient care such as screening for risk factors, diagnosis, management and prevention of disease. Laboratory findings influence approximately 60% to 70% of patient care outcomes.<sup>1</sup> Pathologists thus provide accessible, safe and high quality services. However, despite its critical importance, the number of medical students opting to go into pathology as a career choice remains low.

Pathology is seen as an unpopular career choice among medical graduates worldwide<sup>1,2</sup> with oversubscribed specialties.<sup>3</sup> This situation may be attributed to insufficient

career advice, perceived benefits, limited interest and low financial incentives.<sup>4,5</sup> Recent studies suggest that quality of life issues have become a major determinant in specialty selection and thus have influenced more traditional specialty-linked factors. Gender may influence medical career preference too.<sup>6</sup> A shortage of trained pathologist may be a major factor in declining laboratory standards in Canada and United Kingdom which in turn has adversely affected thousands of patients.<sup>7</sup>

In Canada, the second-year under graduate course in pathology is often the sole exposure of medical students to this subject and expert pathologists.<sup>8</sup> Changes in the structure of training and fewer trained pathologist means developed countries need to rely on foreign recruitment of trained pathologist. There is very little data on the perception of medical students towards pursuing a professional career in pathology based specialties. This study aims to assess factors which may influence medical students in choosing pathology as a viable career choice.

### Methods and Results

A descriptive cross-sectional study survey was conducted at The Aga Khan University (AKU), a private medical college in Karachi, Pakistan in 2013. At the time of this study approximately 500 students were enrolled. All first to final year students, who were on the campus at the time of the study, were included. Students were approached randomly to participate in the study. Informed consent was obtained from all participants, which was approved by AKU Ethical Review Committee.

A structured questionnaire comprising of two sections addressing participants' demographics and perception of pathology in terms of academic, clinical service and financial satisfaction was distributed. The questionnaire used a 10-point visual analogue scale (VAS) to assess medical students' perception of pathology and their interest in making pathology a career choice. The questionnaire was reviewed by leading pathologists and also reviewed by an independent committee for research activities. The reliability of the questionnaire was 62%. A sum score of 70 and above on VAS was considered as satisfactory or strong agreement among students. All

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**Table-1:** Demographic information of the survey participants.

	Total	Group I*	Group II†
<b>Survey Respondents n = 201(89%)</b>			
<b>Gender</b>			
Male	99 (49)	43(53)	56(47)
Female	102 (51)	38(47)	64(53)
<b>Age</b>			
Years (mean)	21.65		
<22 Years	74(91)	63(52.5)	137(68)
23+ Years	64(32)	7(9)	57(47.5)
<b>Year of study</b>			
Year I	-	32 (15.9%)	-
Year II	-	36 (17.9%)	-
Year III	-	13 (6.5%)	-
Year IV	-	-	72(35.8%)
Year V	-	-	48 (23.9%)

\*Group I comprise of students of year I, II and III. †Group II comprises of students of year IV and V.

students were stratified in two groups: Preclinical, year 1-3 students and clinical group year 4 and 5 students.

Data was entered and analyzed using SPSS version 19.0. Mean ± SD or Median (IQR) were calculated for quantitative variables. Fisher's exact test and the Chi-square test were applied to assess association between various categorical variables. Multiple response analysis was used for merging results based on subspecialties of pathology. Binary logistic regression was applied with perception as dependent variable to find out the effect between perception and other factor. P-value < 0.05 was considered significant.

A total of 225 survey forms were distributed and 201 (89% response rate) forms were evaluated. Study demographics are presented in Table-1.

A majority of students (89.5%) felt pathology should be integrated into the curriculum, while 18.0% preferred it as a separate clinical rotation. Majority of the participants were able to identify which subspecialties comprise of pathology (Table-2). Binary logistic regression model was tested by applying omnibus goodness of fit test and the results were found statistically significant (p=0.005). Preclinical year students were more interested in considering pathology as future career option compared to clinical year students (p = 0.043).

Senior students strongly suggested that pathology should be taught throughout medical college years (p= 0.03) and more emphasis should be given to pathology teaching in clinical years (p= 0.001). Both groups agreed that pathologists have less patient interaction compared to other specialties which makes it a less attractive career choice. Peers perception of pathology has a higher impact on juniors compared to seniors (p= 0.04). However, senior's perception of pathology was poor compared to year I and II students (p= 0.05).

Students agreed that clinicians required comprehensive knowledge of pathology however junior students considered this to be far more important than senior students (p=0.009). However, both groups felt that pathology had a major input on practicing medicine. Senior year students strongly suggested the introduction of molecular pathology in medical schools (p= 0.008). Mentorship by pathologists helped students to appreciate the critical importance of pathology. However, students believed that practicing pathology was financially less attractive compared to other subspecialties.

various factors which may account for the low number of medical graduates pursuing pathology as a career option includes lack of exposure (27.8%), poor instruction (12.1%),

**Table-2:** Responses given by participants.

Parameter (<0.05)	95% Confidence Interval for adjusted odd ratio		Crude Odds Ratio	P value (<0.05)	Adjusted Odds Ratio	P value
	Upper limit	Lower Limit				
<b>Gender*</b>						
Male	1.22	4.22	2.27	0.010*	2.27	0.010*
Female						
<b>Education†</b>						
MBBS 1st Year	1.2	12.97	3.54	0.011*	3.95	0.023*
MBBS 2nd Year	0.43	3.49	1.18	0.705	1.23	0.69
MBBS 3rd Year	0.61	11.51	2.65	0.143	2.66	0.19
MBBS 4th Year	1.3	8.11	2.68	0.011*	3.25	0.011*
<b>Age β</b>						
Age ≤22 Years	0.446	2.3	1.48	0.197	1.013	0.975
Above 23 Years						

Reference category:

\*Females; †MBBS 5th Year; β Age <22 Years.

lack of general interest (37.4%), lack of patient interaction (14.6%) and lower incomes (8.1%). Students were moderately satisfied with the current pathology teaching.

## Discussion

Multifaceted aspects of patient care such as diagnosis; management and prevention of disease need input from laboratory services. It has been shown that laboratory findings decide the fate of approximately 60-70% of patient care outcomes.<sup>9</sup> However, despite its critical importance, the number of medical students opting for a career in pathology remains low.<sup>10</sup>

Level of education also factored into how satisfied he/she was with pathology teaching and content. Perhaps, this explains junior student's significant satisfaction level, may be due to exposure and focus on pathology during the first two years of the medical school.

Majority of participants favoured an integrative approach to incorporate pathology into the medical school curriculum.<sup>11</sup> This would allow medical students to experience closely how intertwined and mutually dependent pathology and clinical medicine really are to reach prompt and accurate diagnosis and thus improve patient outcomes.

Pathology as a career choice is not so popular compared to other sub specialties in Pakistan. In the early 1900s an upward trend was seen in the number of US medical student graduates opting for pathology as a career choice which then took a down turn, decreasing by 0.5-1% in the late 1900s.<sup>3</sup> It was observed that pathology courses in early years of medical school played a negligible role in developing students interest.<sup>8</sup> However, in senior years the impact of pathology with particular emphasis on teaching, played a significant role in developing the medical students' perception of the subject and consequent role in careers.<sup>12</sup> In general there is a decline in academic pathology which has been identified as a major gap by the Royal College of Pathologists. This decline has been attributable to lack of input from pathologists in academic decisions that have resulted in a reduction of pathology content in the medical curricula. Therefore, representation of pathologists in medical education departments is an absolute necessity since major decisions are made there. Involvement of pathologist in academia can enhance a positive perception of pathology among medical students and increase student interactions to provide guidance and mentorship.<sup>13</sup> Profile of pathology needs to be raised in medical schools to attract future graduates to adopt pathology as a fulfilling and productive career choice. The study was conducted in one medical college providing a snap shot of the situation and

small study population which is a limitation of this study. A large scale study involving public and private medical colleges is needed to take major policy decisions. We recommend a study to examine processes, problems, and pathology programmes to bring about understanding that in turn can affect and perhaps even improve practice. Reliability of the study questionnaire was low which can be addressed by expanding this study to other medical schools.

In conclusion, this study indicates that majority of students have a positive approach towards the pathology and favour incorporating it in an integrative way into the medical school curriculum.

**Disclaimer:** This study has not been previously presented or published in a conference.

**Conflict of Interest:** None.

**Funding Disclosure:** None.

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