

## Perception of pathology as a career among undergraduate medical students

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### ABSTRACT

**Background.** The choice of a postgraduate specialization in medicine is influenced by many factors. What motivates students to take up pathology as a career option or to reject the same remains unexplored. This study aimed to understand the perceptions of medical students from a college in southern India regarding the role played by pathologists in clinical practice and how this influenced their choice of pathology as a career.

**Methods.** This qualitative study conducted personal interviews with 15 participants (13 undergraduates and 2 postgraduates in pathology) using a semi-structured interview guide. The data were transcribed and thematically analysed.

**Results.** Although most of the participants acknowledged that pathologists play an important role in diagnosis, they were of the view that pathologists have minimal patient contact and do not play the main role in treating patients. They were also of the opinion that the undergraduate course and curriculum in pathology was inadequate in exposing them to the actual practice of pathology. Lower social status and earning potential were also stated as deciding factors in choosing a career in pathology. Pathology residents cited stress-free lifestyle as a motivating factor in choosing pathology as a career.

**Conclusions.** A career in pathology can be rewarding and intellectually stimulating. The fact that a pathologist plays an important role in diagnosis and also patient management must be emphasized in the undergraduate medical curriculum. The medical student will then be able to take an informed decision about his or her career.

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### INTRODUCTION

In India, for many students who take up pathology for postgraduate studies, it may not be the preferred first choice. Admission to postgraduate courses in medicine occurs through competitive examinations where students give their order of preferences for subjects. Even after the course commences a few students give up their seats in pathology for other 'clinical' subjects of their choice which they subsequently obtain through waiting lists. For many students who take up the pathology postgraduation the demands and rigour that the course demands are unexpected. This raises the following questions: What are the motivational factors that play a role in choosing a specialization among medical students? What is the role played by the undergraduate teaching and curriculum in influencing a

career choice in pathology? What are the perceptions of students regarding the pathologist as a clinician?

Data from our own institution, which is over 50 years old, shows pathology ranks low as a career choice compared to other clinical subjects among those who have graduated with an MBBS. On the other hand, radiology, also a diagnostic specialty, ranks higher in demand for a postgraduate seat.

A majority of studies on factors affecting career choices in medicine have emerged from the West.<sup>1–3</sup> Some of these studies have analysed the role of the undergraduate pathology course on forming impressions on students regarding pathology as a career.<sup>4</sup>

Various studies from India that have looked at factors affecting career choices of undergraduates are mainly based on questionnaires.<sup>5</sup> To our knowledge, there is no study from India that has described the perceptions of medical students about a career in pathology.

This qualitative study aimed to gain an understanding of the perceptions of pathology as a career choice among medical students and to examine whether the undergraduate pathology course plays a role in forming these impressions. A secondary objective was to understand the motivating factors behind the choice of pathology as a career choice among postgraduate students.

### METHODS

#### Study design

This study involved individual interviews with undergraduate and postgraduate students. The participants included 3rd and 4th year MBBS students and 1st year pathology postgraduate students.

A qualitative methodology was used with in-depth personal interviews. Career choices may be influenced by several factors some of which may be of greater importance to a small number of students and not applicable to all. The vast number of variables involved may defy a conventional statistical analysis and may lend itself better to a qualitative methodology.

Focus group discussions were not used as we believe that students do not express their views openly and honestly in a group, and only dominant viewpoints prevail.

#### Study participants

We had three study population groups: MBBS students in their 4th term (2nd year), who had completed one-third of the pathology course, MBBS students in their 6th term (3rd year), who had recently completed the pathology course in their curriculum and 1st year postgraduate students of pathology, who had just entered the course. All students belonged to St John's Medical College, Bengaluru.

Ethics approval was obtained from the institutional ethics board of St John's Medical College. Written informed signed consent was obtained from all the participants. Each personal interview lasted 20–25 minutes. The entire interview was recorded and transcribed verbatim.

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### Personal interviews

One-to-one interviews of undergraduate and postgraduate students were conducted. Any student who volunteered and expressed an interest in participating was given a specific date and time for the interview. An interview guide was used as a broad framework. In-depth interviews were conducted, and the students were encouraged to express their views. All the interviews were conducted by BM, herself an undergraduate medical student. The other investigator (AA) who is a teaching faculty avoided conducting the interviews. This ensured that the students felt free to voice their opinions without any hesitation.

A semi-structured interview guide was used which consisted of broad questions. The respondents had ample opportunity to elaborate on issues that interested them. The questions to the undergraduates pertained to the following broad themes: their perception regarding the duties and role of a pathologist in clinical practice, their perception regarding pathology as a career and their opinion regarding the pathology curriculum and teaching. The postgraduates were asked to what extent perceptions of lifestyles had influenced their career choice. They were also asked regarding the influence of teachers and peers in forming their opinion. The students were interviewed one after another till data saturation was reached. As only two

postgraduates out of six consented to participate, data saturation could not be achieved in this group.

A total of 15 personal interviews were recorded using a digital recorder.

### Data analysis

The audiotaped data were transcribed verbatim and analysed independently for emerging themes by the two investigators. This was done by coding the transcripts from which themes and subthemes were identified. The investigators met regularly to discuss individual analysis and reached on a consensus regarding the themes.

### RESULTS

A total of 15 personal interviews were conducted, 13 with undergraduates (of 120 students) and 2 from 1st year postgraduate students. Eight themes with multiple subthemes emerged from the analysis and are described below. Representative excerpts are given from the interview transcript in Table I.

#### *Theme 1: Role played by the pathologist in clinical practice:*

All the undergraduates and postgraduates said that pathologists played a crucial role in diagnosis. Contrary to popular belief,

TABLE I. Themes that emerged from the in-depth interviews along with some of the excerpts in italics

#### *Theme 1: Role played by the pathologist in clinical practice*

- 'Without pathologists, treating a patient is like fishing in an ocean. You don't know what you are doing; you just make random steps and it's not evidence based. Pathology is what backs you up with the evidence you need to take the right steps.'
- 'Unlike microbiology, where they actually do antibiotic susceptibility testing, I don't know what pathology does to help in the management of the patient.'

#### *Theme 2: A pathologist lacks patient contact and is not the 'main doctor'*

- 'They don't see patients; only specimens and histology. The only contact I've seen them have with patients is through FNAC (fine-needle aspiration cytology).'
- 'The clinician takes on the challenge of treating the patient and he does everything; he'll be the one ordering all the biopsies, laboratory investigations, everything. When the patient gets better, who's going to be thanked? The problem is the emphasis is only on the person who is in front of you. It's not given to the other people. No one will say: 'Oh! You made this diagnosis.' That only happens to the treating consultant. The patient may not know who found the rare findings even. That's the disadvantage for the pre- and paraclinical. They are always behind the curtains.'

#### *Theme 3: No exposure to the actual practice of pathology during the undergraduate course*

- 'We never entered the laboratory as such. We don't know how the pathology laboratory functions. We've been told the procedure but I've actually never seen it. We have practical in medicine, we have practical in OBG (obstetrics and gynaecology) where we develop clinical skills.'

#### *Theme 4: 'Stress-free' lifestyle of a pathologist*

- 'Pathology and microbiology are the subjects involved in clinical diagnosis also; therefore, I feel these two subjects are not as stressful as medicine or surgery because they don't have to do 24 or 36-hour duties.'

#### *Theme 5: Lack of social acceptance of pathologists as 'doctors' and low earning potential*

- 'Laymen have a different idea about a pathologist and medical students have a different idea about them. Laymen think pathologists are just technicians who just work and who do need technical knowledge about the subject; who just do things like a lab assistant. No one knows a pathologist is a doctor.'
- 'They know what a paediatrician does. They know what the physician does. But nobody knows what a pathologist does.'
- 'Radiologists earn a lot. The equipment I guess: The equipment is super-expensive in radiology.'

#### *Theme 6: Clinical colleagues' perception of pathologists*

- 'The clinician mostly encircles one thing, sends it to the pathologist, the pathologist sends it back saying "sample inadequate". It's more of a blame game they play with each other. Clinicians say pathologists take their own time; pathologists say clinicians don't send a proper sample.'

#### *Theme 7: Lack of knowledge about the postgraduate training curriculum and course among undergraduates*

- 'PGs (postgraduates) do night duties once in a while.'

#### *Theme 8: Postgraduates' choice of pathology as a career is influenced by peers and lifestyle*

- 'I didn't want to go too much into the hospital and I didn't want a busy life; I wanted to be settled. Working hours looks very comfortable except when we're doing our postgraduation. Otherwise, I understand it is only a 9-to-5 job with no emergencies on holidays. And I can also manage my family. Family time will also be more.'

pathologists were not regarded as doctors performing only autopsies. Their role in diagnosis in living patients was acknowledged by all.

However, there was limited knowledge about their role in patient management. The fact that pathologists also participate in therapeutic decisions was largely unknown to the participants.

*Theme 2: A pathologist lacks patient contact and is not the 'main doctor'*

The perception was that patient contact was minimal and limited to fine-needle aspiration cytology (FNAC). This was cited as a strong reason for not wanting to choose pathology as a career. They were also of the opinion that the pathologist's role was behind the scene and therefore did not figure as the main doctor diagnosing or treating the patient.

*Theme 3: No exposure to the actual practice of pathology during the undergraduate course*

The main concern of the students was that they never had any 'practical' exposure to pathology; and hence, they were largely unaware of what a pathologist actually does. This was in contrast to clinical subjects where they have actually seen a clinician at work. The only clinical exposure that they had in the pathology practical was a visit to the FNAC clinic where they saw a pathologist perform the FNAC and also report on the slides.

Although the pathology teachers were generally perceived as passionate about teaching, the students had no exposure to the actual role played by these teachers as diagnosticians.

*Theme 4: 'Stress-free' lifestyle of a pathologist*

Pathology as a career was commonly perceived as less stressful with shorter working hours compared to other 'clinical' subjects. It was also believed to be a preferred career choice for women who would like to spend more time with their families. Some students believed that the job of a pathologist was sedentary and more like a 'desk job'.

*Theme 5: Lack of social acceptance of pathologists as 'doctors' and low earning potential*

This was a dominant theme that emerged from all the groups as an important factor making a career choice. Many of the respondents expressed the view that society does not recognize pathologists as doctors. This was also expressed by the postgraduates as a hurdle when choosing pathology as their field of specialty.

*Theme 6: Clinical colleagues' perception of pathologists*

An interesting finding was the influence of the role of clinicians in forming an opinion about pathologists. The clinicians' irritation over delayed pathology reports was observed by many students.

*Theme 7: Lack of knowledge about the postgraduate training curriculum and course among undergraduates*

The undergraduates were largely unaware of the structure of the postgraduate course in pathology. They had vague opinions about postgraduates of pathology who they felt had a lot to study but did few night duties.

*Theme 8: Postgraduates' choice of pathology as a career influenced by peers and lifestyle*

Postgraduates who chose pathology did so because they either liked the subject or because it was the best available choice

among the so-called 'paraclinical subjects'. Peers influenced the choice in a positive way. Pathology also offered a more relaxed and less stressful life and more time could be spent with the family.

## DISCUSSION

Our study explores the perception of pathology as a career choice among medical students at a major medical college of southern India. A majority of studies on career choices in medicine have emerged from the West. A study published by Murdoch *et al.* in 2001 reviewed publications concerning factors affecting career choice in medicine.<sup>1</sup> They showed that there were multiple areas of content domain that consistently correlated with career choices: biosocial orientation, bio-scientific orientation, academic interest, prestige, income and desire to avoid role strain and role support.

A study by Krol *et al.* in 1998, which involved a survey of 4888 physicians, showed certain positive factors such as intellectual content of specialty and negative factors such as high demand on time and stress, as factors influencing career choice.<sup>2</sup> A questionnaire survey of specialty choices among the UK medical graduates by Lambert *et al.* showed that choice for general practice was low.<sup>3</sup>

One of the main themes that emerged from our study was that although a pathologist is indispensable for making an accurate diagnosis, she/he lacks patient contact and is therefore only behind the scene. A study by Hung *et al.* used focus groups of senior medical students to explore both general and pathology-specific influences on residency choice.<sup>5</sup> Several general influences were identified, including students' expectations for their future clinical practices, their own clinical rotation experiences, influences from other people including mentors, and their choice to reject certain fields. Several specific negative influences were also revealed, the most important being the perception that pathologists were in some ways 'non-medical' and that pathology was 'invisible' in clinical practice.

Another theme that emerged from our study was that the undergraduate curriculum and course were ineffective in conveying to the student the actual nature of pathology practice and the duties of a pathologist. A questionnaire-based survey by Holland and Bosch showed that the second-year pathology course had little effect on medical students' perceptions of pathology but did provide some increase in their understanding of pathology as a profession. Those students who were interested in pathology were drawn because of a perceived fit between their personalities and the perception of pathology as a solely scholarly and isolated specialty.<sup>6</sup> A study by Raphael and Lingard in Canada, explored the impression of pathology as a career formed during the 2nd year of undergraduate medical school, using the qualitative methodology.<sup>4</sup> They found that the course was considered important for students forming impressions of pathology, but also related to the quality of the teaching and personality of the teachers. In contrast, in our study the nature of the discipline was less important than lifestyle reasons for choosing pathology among the residents (postgraduates) in pathology, who also formed part of the study group.

A study by Ford used qualitative techniques to investigate why pathology residents chose to specialize in pathology and why clinical residents rejected a pathology career.<sup>7</sup> Pathology residents, as well as non-pathology residents across Canada, were surveyed. Pathology residents cited various attractive features of pathology practice, including its academic nature, the opportunity to explore basic pathogenesis, and its interesting

and varied daily work. The non-pathology residents rejected pathology because they preferred direct patient contact; however, a sizable minority blamed insufficient or inadequate medical school experiences in pathology. Our postgraduate students cited stress-free lifestyle as the most important factor in favour of pathology as a career. Lack of patient contact was a strong reason to reject pathology among our medical students also.

Other themes that emerged from our study are related to sociocultural factors. The 'social acceptance' of pathologists and earning potential seemed to be important factors for rejecting a career in pathology. The idea that pathology was suitable for those who valued 'more family time' especially women, portrays a certain stereotype influenced by sociocultural beliefs.

In India, various studies have looked at factors affecting career choices of undergraduates. These studies have been mainly based on questionnaires.<sup>8-11</sup> A study by Subba *et al.* showed that most undergraduates in southern India opted for specializations and would end up working in hospitals rather than primary health centres.<sup>8</sup> Surgery was the most preferred subject (32.2%), and only 0.3% declared pathology as a preferred choice. A questionnaire-based study by Kumar and Dhaliwal also showed that most preferred choices were medicine and surgery and role modelling by faculty during departmental postings could be a factor influencing choice.<sup>9</sup>

Among the factors influencing career choice among medical students, interest in specialty, income generation, specialty reputation, job security featured high in a study of 190 medical students from India.<sup>11</sup> Clinical subjects such as medicine, surgery and obstetrics and gynecology were preferred by these students.

In a study spanning five countries that analysed factors that influenced future specialization among medical students, interest in the subject was cited as the most important factor, and anatomy was the most preferred among the basic science subjects.<sup>12</sup>

Pathologists provide invaluable medical services, which is usually 'invisible' to the public at large. They are only perceived as doctors working in the laboratory. The fact that pathologists provide diagnoses and management decisions to patients is largely unknown. In India, undergraduate medical students are taught pathology in the 2nd year of the medical curriculum. In the 1st year, the basic sciences, namely, anatomy, physiology and biochemistry are taught. The prescribed syllabus in pathology is vast and students are expected to learn basic and systemic pathology which includes aetiology and pathogenesis of diseases as well as basic gross and microscopic morphology of many pathological entities. Also, as pathology is now at the forefront of the molecular revolution in clinical medicine, molecular aspects of diseases have also been introduced into the syllabus of pathology increasing its volume further. The syllabus is vast and daunting, and examinations rely largely on memorization. The challenges of actually making a diagnosis and solving a relevant clinical problem, which is the backbone of pathology practice, are not currently introduced to the student. Furthermore, the fact that the actual practice of pathology is intellectually stimulating and rewarding is not apparent in the current methods of teaching and learning. Pathology must be made visible to undergraduate medical students and how pathologists contribute to clinical care must be effectively addressed.<sup>13</sup>

## CONCLUSIONS

This study was done to describe the perceptions of pathology as a career among medical students. The students perceived pathology as an invisible specialty with hardly any patient contact. Although they acknowledged that a pathologist was important for making a diagnosis, they were largely unaware of the pathologist's role in patient management. The undergraduate teaching and curriculum was not effective in portraying the actual practice of pathology. Interestingly, social unacceptance also played an important role in the negative perceptions towards pathology as a career. There was a lack of awareness regarding the rigour and training curriculum of the postgraduate course. Postgraduates who chose pathology did so mainly because of the perceived stress-free lifestyle of a pathologist rather than a passion for the subject.

Modification of the undergraduate pathology curriculum and teaching methods to incorporate clinical scenarios, problem-based learning methods, internship rotations in the pathology department, participation in tumour boards, multidisciplinary meetings and mortality meetings are some of the ways to form positive perceptions regarding pathology as a career option among medical students. It is important for our students to realize that pathologists play a crucial role in the diagnosis and management and also that a career in pathology is a deeply satisfying and stimulating journey.

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*Conflicts of interest.* None declared

## REFERENCES

- Murdoch MM, Kressin N, Fortier L, Giuffre PA, Oswald L. Evaluating the psychometric properties of a scale to measure medical students' career-related values. *Acad Med* 2001;**76**:157-65.
- Krol D, Morris V, Betz J, Cadman E. Factors influencing the career choices of physicians trained at Yale-New Haven Hospital from 1929 through 1994. *Acad Med* 1998;**73**:313-17.
- Lambert TW, Goldacre MJ, Turner G. Career choices of United Kingdom medical graduates of 2002: Questionnaire survey. *Med Educ* 2006;**40**:514-21.
- Raphael S, Lingard L. Choosing pathology: A qualitative analysis of the changing factors affecting medical career choice. *J Int Assoc Med Sci Educ* 2005;**15**:81-91.
- Hung T, Jarvis-Selinger S, Ford JC. Residency choices by graduating medical students: Why not pathology? *Hum Pathol* 2011;**42**:802-7.
- Holland L, Bosch B. Medical students' perceptions of pathology and the effect of the second-year pathology course. *Hum Pathol* 2006;**37**:1-8.
- Ford JC. If not, why not? Reasons why Canadian postgraduate trainees chose—Or did not choose—To become pathologists. *Hum Pathol* 2010;**41**:566-73.
- Subba SH, Binu VS, Kotian MS, Joseph N, Mahamood AB, Dixit N, *et al.* Future specialization interests among medical students in southern India. *Natl Med J India* 2012;**25**:226-9.
- Kumar R, Dhaliwal U. Career choices of undergraduate medical students. *Natl Med J India* 2011;**24**:166-9.
- Bhat S, D'Souza L, Fernandez J. Factors influencing the career choices of medical graduates. *J Clin Diagn Res* 2012;**6**:61-4.
- Gour N, Srivastava D, Adhikari P, Shahi A, Sharma MK, *et al.* Specialty preference among medical students and factors affecting it. *Online J Health Allied Sci* 2011;**10**:12.
- Kumar A, Mitra K, Nagarajan S, Poudel B. Factors influencing medical students' choice of future specialization in medical sciences: A cross-sectional questionnaire survey from medical schools in China, Malaysia and regions of South Asian association for regional cooperation. *N Am J Med Sci* 2014;**6**:119-25.
- Kar A, Kar T, Dash K, Rout N, Bhuyan P, Panda S, *et al.* Undergraduate pathology education: Meeting the challenge ahead. *Int J Clin Med* 2012;**3**:83-7.