

# Aptitude evaluation for medical profession in first and final year M.B.B.S. students

Salpekar Radhika<sup>1</sup>, Mujawar Nilofer<sup>2</sup>

## Abstract

Aptitude is the competency to do a certain kind of work at a certain level. The medical profession remains one of the most popular choices of the Indian youth. Four factors are necessary for becoming a good doctor: empathy, fortitude, aptitude and a sense of responsibility. Studies suggest that aptitude evaluation before entering a profession has many advantages. Yet it is not undertaken before joining the medical colleges. The Differential Aptitude Test Battery (DATB) is a tool for evaluation of aptitude and evaluates a person's verbal reasoning, abstract reasoning, numerical ability space relations and language usage. A study was undertaken to evaluate the aptitude of first and final year students for the medical profession, to compare the aptitude for medical profession between male and female students and to determine a correlation between knowledge of English language and their reasoning powers.

Keywords: Aptitude, DABT, Medical Profession

<sup>1</sup>MBBS Student, <sup>2</sup>Professor,  
Department of Paediatrics, NKPSIMS  
& RC, Digdoh Hills, Hingna Road,  
Nagpur -440019.  
nilofer.mujawar@gmail.com

## Introduction:

The medical professional's job is not easy. To have the right attitude: hard work, sleepless nights, preparedness for a kaleidoscope of emotions, service over economics, willingness to look death in the eyes – the medical professional has to have the Right Aptitude. Studies suggest that Aptitude Evaluation before entering a profession provides the advantages of increased professional thinking, enhanced communication skills, better problem solving, decision making and increased learner motivation (1).

Aptitude career tests which are specially designed and developed by expert psychologists help candidates to know what role they will fit into in future. The test analyses the aptitude and skill sets of candidates like logical thinking skills, analytical skills, leadership capabilities, power of comprehension, communication skills, etc, along with capabilities that can be improved. Hidden potential or talents can be assessed. The choice of occupation of young adolescents has become an area of interest to educational planners and educational psychologists (2). This is a result of the awareness by stakeholders of the inherent dangers and frustrations suffered by the students, who find themselves in unsatisfactory professions. Consequently, educational authorities have realized the need for institutions to have career guidance counsellors who would help the adolescents select an appropriate career in line with their capabilities.

The choice of a particular career is influenced by certain factors, among which are peer group influence and parental influence. Family influence is an important force in preparing youth for their roles as workers (3). Young people develop many attitudes about work and career as a result of interactions with their family. Family background provides the basis from which their career plans and decision making evolve. However, within each family, the level of involvement can vary, offering both positive and negative influences. A

paper by Penick and Jepsen stated that parental influence surpasses that of peer influence (4). But, this is a variable factor pertaining to the student's rapport with their parents and peers. A study by Csinady and Molnar found that altruistic motivations were the most significant career choice reasons among medical undergraduates (5).

The medical profession faces a changing gender composition with more and more females opting for medicine as their career. A study in the United Kingdom showed an increase in feminisation of the medical profession (6).

## Aims and Objectives:

We did this study to investigate the relative importance of Aptitude in choosing a career and to find out if parental and peer group have some bearing on the choice of career among the undergraduates. We also aim to explore if there is difference in aptitude for the medical profession between girls and boys.

1. To determine the proportion of students with medical aptitude.
2. To compare the aptitude for medical profession between male and female students.
3. To determine a correlation between knowledge of English language and their reasoning powers.

## Materials and Methods:

**Study Design and Participants:** This is a cross-sectional study that was conducted during May and June 2012. It aimed at assessing the aptitude for medical profession among undergraduates. Therefore, the population of this study comprised of students of First and Final year M.B.B.S. attending NKP Salve Institute of Medical Sciences and Research Centre, Nagpur. 250 students were included in the

## Educational Research

study. Of these, 100 students completed the test all the way through. 64 students did not attend the test and 58 completed the test only partially. The results of 28 more had to be excluded because of misconduct.

**Data Collection Tools:** We used Differential Aptitude Test Battery (DATB) which is a well validated, time tested, objective based questionnaire in English. It included 330 questions under 5 sections as follows:

1. Verbal Reasoning.
2. Abstract Reasoning.
3. Numerical Ability.
4. Space Relations.
5. Language Usage.

This questionnaire was used to provide an integrated, well-standardized procedure for measuring the abilities of the students. All the questions were based on basic knowledge and comprehension.

### Contents:

**Verbal Reasoning** – The Verbal Reasoning Test, as the name implies, is a measure of ability to understand concepts framed in words. It is aimed at the evaluation of the student's ability to abstract or generalize and to think constructively and logically. The analogies from this test are peculiarly appropriate for the measurement of reasoning ability. This skill is important for work involving communicating ideas or understanding written material.

- Sample Careers: Law, Journalism, Social Work, Arts, European Studies, Media, Public Relations, Advertising, Education, etc.
- Sample subjects: English, History, Languages, etc.

**Abstract Reasoning** – The Abstract Reasoning Test is intended as a nonverbal measure of the student's intellectual ability. The series presented in each problem requires the perception of an operating principle in the changing diagrams. In each instance, the student must discover the principle governing the change of figures and give evidence of his understanding by designating the diagram which logically should follow.

- Sample careers: Engineer, Doctor, Scientist, Musician, Software Design, Teacher, Computer Programmer, Mechanic, Management, etc.
- Sample Subjects: Physics, Chemistry, Biology, Music, History, Art, etc.

**Numerical Ability** – The Numerical Ability items are designed to test understanding of numerical relationships and facility in handling numerical concepts. The problems are framed in item type ordinarily called “arithmetic reasoning”.

- Sample careers: Finance, Science, Architecture, Engineering, Sales, etc.

- Sample subjects: Maths, Physics, Accounting, Economics, etc.

**Space Relations** – The capacity to imagine a constructed object from a picture of a pattern has been used in this test. It measures the ability to visualise a three-dimensional object from a two-dimensional pattern and to visualise how this object would look if rotated in space.

- Sample careers: Art, Design, Architecture, Engineering, Carpentry, Dentistry, Photography, Fashion Design, etc.
- Sample subjects: Art, Home Economics, Technical Graphics, etc.

**Language Usage** – Measures ability to spell common English words. This is a basic skill necessary in many academic and vocational pursuits, especially in courses requiring written reports. It also measures the ability to detect errors in grammar, punctuation and capitalization.

- Sample careers: Writing, Teaching and almost all University courses, etc.
- Sample subjects: All subjects and all exams.

The students were asked to solve the questionnaire in a stipulated time of 2 hours, each section getting a specific time allotment, as follows:

Verbal Reasoning –	20 minutes
Abstract Reasoning –	20 minutes
Numerical Ability –	20 minutes
Space Relations –	30 minutes
Language Usage –	30 minutes

Based on the above sections, another skill is measured, which is the “Educational Aptitude”. It is measured by combining the score of Verbal Reasoning and Numerical Ability. This score provides the best general measure of educational aptitude or the ability to learn from books and teachers and to perform well in academic subjects i.e. to learn from a traditional teaching environment such as a school, a college or a university.

The participants were also asked to answer questions about their family background and also what prompted them to opt for medicine as their career.

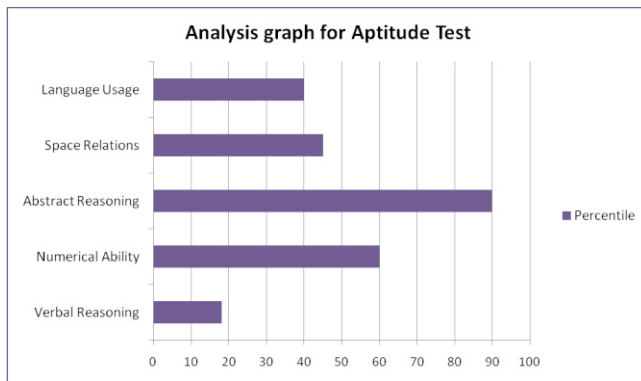
### Ethical considerations:

A written informed consent was obtained from each participant. The study objectives were explained to the students. Also, the participants were assured confidentiality of the collected information and that they were free to decline participation in the study. The study protocol and data collection instrument were reviewed and approved by The Institutional Ethics Committee. Permission to administer the questionnaire was obtained from the teachers concerned.

**Statistical analysis:**

The questionnaires were corrected manually using a validated OHP answer mat. Data were entered in MS Excel and the Raw Score was converted into Percentile Score using a validated conversion table (Figure 1). This was done to standardize the scores. Data were analysed using Percentage Analysis. This was done manually by simple percentage method after which we graded the students into various categories ranging from LOW to VERY HIGH. Accordingly, two of the best scores/grades were selected and suitable career options suggested. Both, regular batch and repeater batch students of first and final year were included. Variables such as schooling and medium of school education were not included in the outcome.

**Figure 1:**  
**Analysis graph for Aptitude test. The Percentile Scores have been entered according to the respective fields. Two of the highest Percentile scores are selected i.e. Abstract Reasoning and Numerical Ability, and suitable career options are suggested.**

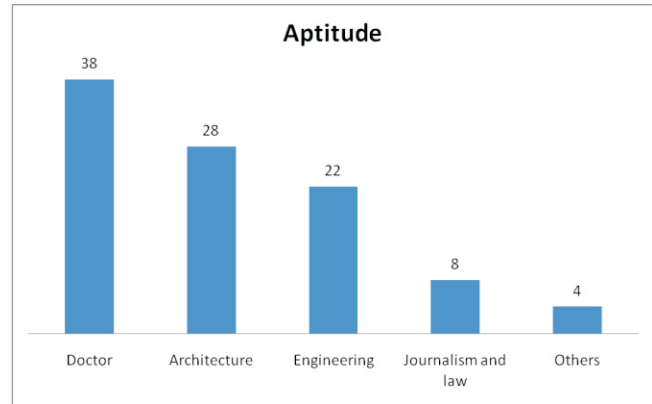


**Results:**

Of the total 250 students approached, the result of 100 students was analysed. There were 62 males and 38 female students. 38% of the students possessed the aptitude required for medical profession. The other career options suggested included major fields such as Engineering, Architecture, Journalism, Law, Finance, etc. Other fields included were Dentistry, Fashion Designing, Software Designing, Teaching, etc (Figure 2).

These results suggest that 38% of the students have the required aptitude for medical profession. This means, they had a high score in Abstract Reasoning. Some students showed good grades in other sections as well. This suggests that students also possess a good aptitude for more than one field. Apart from the 38%, the rest of the students also possessed the aptitude for becoming a doctor, but in a slightly lower grade. Similarly, students who showed the aptitude for

**Figure 2:**  
**Percentage of Students possessing the aptitude for various fields**



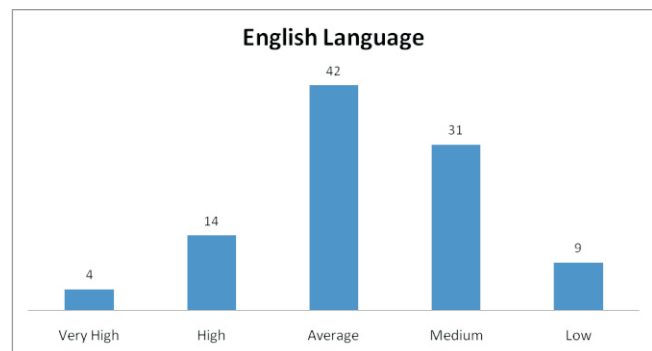
medical profession also showed some diverse range of aptitude in the other fields. The results can thus be interpreted variably. 5.2% of the lot showed high to very high aptitude in all the fields, broadening their area of career options.

Out of the 53 First year students, 26.6% have the aptitude to become doctors. Of the 47 Final year students, 51.3% showed high grades. Gendered results were seen in this study.

31.5% of 62 males and 41.7% of 38 females gave a good result. There is a significant difference in the percentage of aptitude possessed by males and females (7).

14% of the undergraduates have High English Language skills. This was based on their ability to spell common English words and correct grammatical and punctuation mistakes. 42 out of 100 students have Average English language skills. This result suggests the students' command over English language (Figure 3).

**Figure 3:**  
**Comparison between the percentages of students showing various grades of skills in the English Language**



## Educational Research

---

High Educational aptitude was seen in 38% of the students, suggesting their ability to learn from books and teachers. 16 students have Low Educational aptitude.

As expected, 87.8% of the students said that, the decision to opt for medicine as their career was their own. Altruism and a sense of helping mankind seemed to be the common factor among many such students (8). 9.7% said that their parents and family members prompted them to become doctors. A mere 2% said that their peer group influenced their choice.

### Discussion:

Presently, there is no structured program for youngsters to assess themselves and to make an informed choice when it comes to choosing a profession. Our data reveals that only a third of the medical undergraduates have aptitudes for the medical profession. The rest of the students showed an aptitude corresponding to a variety of other fields like Architecture, Engineering, Law, Journalism, Computer Designing, Fashion Designing, etc. Our findings therefore suggest that these 38% students have a better potential in the field of medicine. Students that are suited for other fields can also become good doctors. This can be achieved by the persons' innate or inherent aptitude, interest and dedication for their jobs. Hence, four factors are truly necessary for becoming a good doctor: Empathy, Fortitude, Aptitude and a Sense of Responsibility.

Aptitude is the competency to do a certain kind of work at a certain level. The aptitude measures the inclination, the tendency, readiness to learn and personal strengths and weaknesses. These career tests focus on a candidate's analytical and abstract reasoning skills with regard to their numerical, verbal and spatial capabilities. A candidate may have the adequate educational qualification and work experience. But an aptitude test will determine how they are going to apply the acquired knowledge and skills in a specific domain or situation.

A varying degree of results were seen in first and final year students. More than half of the final year students showed the aptitude required for medicine. The innate nature of aptitude is in contrast to achievement, which represents knowledge or ability that is gained. This means that the students who actually reached the final year probably possessed an inherent aptitude for medicine as opposed to the freshmen that contained a very diverse group of aptitudes. Students cross the obstacles of medical school on the basis of their judgement skills. Maturity is attained over a period of these years at medical colleges. Thus, the discrepancy that is seen in these results may well be because of the sheer innateness of aptitude that students of final year possess.

About 41% of the female students have the medical

aptitude as opposed to 31% of the male students. Our findings are consistent with those of other studies (6) that gender discrimination and segregation is still prevalent in the medical profession. But there are significant differences in perceptions between the genders (9). A number of females are breaking barriers and choosing a career that satisfies their conscience and works best with their abilities.

Aptitude and Ability seem to be words that sound alike. However, there is an ocean of a difference between aptitude and ability. Through work experience, a candidate may acquire the 'ability' to perform a role or fulfil a task. On the other hand, aptitude refers to possessing an innate potential or natural talent to complete a specific task, even if this talent has not developed to the fullest. This aptitude test was conducted to find out if there is any correlation between the aptitude of a person and their choice of career. The fact that a person shows a high aptitude in a particular field refers to the persons' ability to excel in that particular field. Measuring the aptitude of students before choosing a career is now rapidly becoming popular. The choice of profession should be a decision that has been thought through and through with the guidance of parents and teachers (10). Of paramount importance is the fact that students should not succumb to parental and peer pressures.

Thus undergoing an aptitude test prior to entering any profession can help students immensely. Aptitude test can be used to narrow down the career options and also to give a head start to their careers (11). Students are entering the medical profession while possessing an aptitude for other careers. Parental Counseling is equally important to sensitize parents about the fact that the aptitude of a child holds an important stand in deciding the career. Girls perhaps because of their maternal instincts have a greater aptitude for practicing medicine than the boys. As the time spent in the medical college increased the aptitude for the medical profession also increased. A good proportion of students become doctors despite having a below average command over the English language. Peer group hardly influences the choice to choose the medical profession.

### Impact:

The study would make the students aware of their strengths and weaknesses. Though aptitude for English language is lacking it poses no difficulty for the students but it would help the students if the teachers simplified the matters for them. Teachers could assess the abilities of individual students and accordingly help them in the/those fields in which they have a weakness. And also encourage those fields in which they have a strong aptitude.

**Acknowledgement:**

We thank the Medical Research Unit of NKP Salve institute of Medical Sciences for sponsoring this research.

**References:**

1. Bennett GK, Seashore HG, Wesman AG. The Differential Aptitude Tests: An Overview. *The Personnel and Guidance J* 1956; 35:81-91.
2. Middleton EB, Loughhead TA. Parental Influence on Career Development: An Integrative Framework for Adolescent Career Counselling. *Journal of Career Development* 1992; 3:161-173.
3. DeRidder L. The Impact of Parents and Parenting on Career Development. *Comprehensive Career Development Project* 1990: 325.
4. Penick N, Jepsen D. Family Functioning and Adolescent Career Development. *Career Development Quarterly* 1992; 4: 208-222.
5. Csinady A, Molnar R, Hazag A. Career choice motivations of medical students and some characteristics of the decision process in Hungary. *Central European Journal of Medicine* 2008; 3(4):494.
6. Miller DS, Slocombe TE. Preparing students for the new reality. *College Student Journal* 2012; 46(1): 18.
7. Kaplan B, Uner S. Desirability of medicine as a profession in developing countries: The case of Turkey. *Cah Social Demogr Med* 2010; 50(4): 517-28.
8. Riska E. Gender and Medical careers. *Maturitas* 2011; 68(3): 264-7.
9. Eisenberg RL, Yablon CM. Career Development for residents and beyond: filling the gaps. *AJR* 2011; 196(1): 6-7.
10. Aptitude test may be fairer way of selecting medical school candidates. *BMJ* 2012; Newspaper Article: 21.
11. Clark D, Miller K. "Knife before wife": An exploratory study of gender and the UK medical profession. *Journal of Health Organization and Management* 2008; 22(3): 238.