



## **Medical Education and the Loss of Productive Years: Part 1, Highlight of the Problem**

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### **Author's contribution**

*The sole author designed, analyzed and interpreted and prepared the manuscript.*

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### **ABSTRACT**

The core objective of the current article is to highlight some time related issues of medical education. In the last few decades, a significant high trend for studying medical education has been observed. In many countries, a significant surplus pool of doctors are waiting for residency, practice and beginning of their profession. Hence, there are more doctors than the requirements. Some professional studies are getting fewer students, leading to a mismatch of supply and demand; this require increasing government and private sectors' spending. The students also suffer as they lose their precious time and they could not start a professional life as early as possible. After doing 20 to 30 years of study, there is not much time for doing other things.

**Keywords:** Medical education; profession(s); complex and time consuming study; trend; loss of quality time.

### **1. INTRODUCTION**

It seems that to become a doctor is a desire of most students these days. However, the lengthy period of medical education that a student has to

spent to become a doctor is quite unhappy but unavoidable. Undergraduate medical education is eight years or less, but if residency is included it may be longer (12-14 years) [1]. For instance, a plastic surgeon studies 6+4 years residency +

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2 years for general surgery which make the entire period 12 years [1]. Moreover, the financial incentives after spending so much money and quality time is not greater than other professions, for instance, IT and banking [2]. Actually, students do not act according to their own wishes and nobody encourages them to think about themselves. They must think about their passion and purpose of life. They have an illusion of comforts of life and money because society has created such images [3]. They are certain that after completing their medical education they would settle for a life of luxury. However, time is more precious than money. The one thing that medical students lose in their life is their quality time [3].

Medical education is also not inexpensive. Students have to spend or borrow \$150,000 or more for completing the dreams of others [4]. They may earn more in their later life but for many students the first task is to pay the huge debt, thus they can't enjoy life and can't spend much at the beginning of their professional life. Unfortunately, they have to pay their debt and decrease their productive years [4]. Many friends leave them because of their commitments and unavailability [5].

There are many professions and even hobbies that have made many people rich and famous at a very early age. Wehr [6] gives the example of young basket-ball player Harden and considers him very fascinating. At a very early age, he has made millions of dollars and fame and his future is very bright in National Basket-ball Association (NBA). Similarly, Berger [7] claimed that Jon Jones is very young, he is the Ultimate Fighting Championship (UFC) Light Heavyweight champion and he is under 30. There are many examples of young players such as tennis star Novak Djokovic and Jamie Anderson (Olympic gold medallist snowboarder) [8, 9]. However, sport is not the only profession where people have made money and fame at very early age. According to Shuker [10], many pop music groups such as the top pop punk boy band of Australia 5 Seconds of Summer; this group is consisting of Michael Clifford (19 years), Luke Hamblings (19 years) Calum Hood (19 years) and the eldest member of the group Ashton Irwin (21 years). They are young, famous and rich, and have much life ahead to do many things and to accomplish many things.

Another profession concerned with people's life is flying commercial aeroplanes. However, as

compared to medical profession, it takes much less time. For instance, Pilot Career News reported that two teenagers about 19 years of age Besa Mumba and Luke Elsworth recently obtained flying jobs [11]. Luke completed his Multiple Crew Pilot Licence (MPL) along with CTC Aviation in just 18 months and now he is working as First Officer in the UK. While Basa, a female, is working with national airline of Zambia.

Nevertheless, in other professions such as information technology (IT) and banking, many young entrepreneurs have made much money and fame at very young age. As compare to medical profession, they did less toil, did not spend much time and money and follow their passion doing something innovative. For example, Raynes-Goldie stated that Mark Zuckerberg is a young programmer and entrepreneur and he became the most influential programmer of the world just at the age of 32 [12]. Despite these examples of success, many young students still want to become a doctor. The purpose of the current article is to give an overview of process time of becoming a healthcare professional.

## 2. METHODS

The literature in Google, Google Scholar and PubMed were searched using such keywords as medical education, duration of medical education and residency, time spent in medical education, medical education in USA, road to become doctor, residency, young age achievement, minimum age of commercial pilot, salary comparison, fame at young age, young professionals and young sports men. The top 100 titles and abstracts resulting from each search were scanned looking for the keywords. However, due to sparsity of available published and/or online material only few were matching the keywords and these were included in the literature review. All other search results were excluded.

## 3. DISCUSSION

### 3.1 The Complexity of Medical Profession

Barrows [13] stated that to become a medical professional is not easy and an individual has to study for an extended period to achieve a medical degree. Nevertheless, there are some

misconceptions about the process of medical education. However, prior to defining the process, it is essential to classify medical professionals into two groups: (1) primary care healthcare professionals and (2) specialists. Primary care healthcare professional is the first point of call of patients; they look at all the different aspects of patients' illness and refer to specialists what is beyond his/her ability. On the contrary, specialists focus on specific illnesses such as internal medicines, general surgery, paediatrics, obstetrics, urology, cardiology, orthopaedics, etc.

### 3.2 The Process of Medical Education

There are two dimensions of this process: (1) knowledge about the basic sciences where the individuals have to learn about the complexities of different systems of human body; and (2) knowledge and application of the clinical sciences where the individuals have to learn about treatment plans, etiology, physical examination, diagnosis and interaction between physician and patient. An outline of the medical education process has been exhibited in Fig. 1. The process begins with B.A. or B.S. degree then the students' undergraduate medical education process starts. Then they receive residency training, and finally, they are ready for practice. Fig. 1 also demonstrates specialists have to complete additional subspecialty training before entering into practice, which is called "Fellowship" [14].

According to Fig. 1, a medical student spends 4 to 5 years for undergraduate degree, University of Wyoming (UWyo) or University of Washington (UWash) 4 years, for residency 3 to 7 years and for fellowship 1 to 2 years. If the least numbers of years are added then the total years will be 12 years; however, residency can increase this up to 15 years. Fig. 2 shows the variation in residency period according to the disciplines [14].

The first two years of medical education are very important as during this period an individual learns about discipline-specific courses such as Human Anatomy, Physiology, Immunology, Micro-Biology, Biochemistry, Pathology, etc. The basic physical skills of examination and patient interview techniques are developed during the first two years. In addition, in the preceptor setting, opportunities are provided to student for practice; hence, the students enter into a practical session from observational practice.

Next, they spend 3 to 4 years for clerkship and learn a bulk of clinical instructions. During clerkship years they learn how to diagnose patients and develop treatment plans, and here, they use the knowledge they learnt during first two years [14].

### 3.3 Country-wise Differences in Medical Education

However, in different countries the duration of medical education differs. In this world or universally, as compared to medical profession and training, no other discipline is so well defined. Nevertheless, Wojtczak and Schwarz [15,16] do not agree with this perception; they stated that medical educators have created potential confusion globally by explaining a collection of terminology and pathways.

The clarification of the structure of different countries medical education is very useful to accomplish the purpose of this article. One reason for this explanation is medical graduates and students' mobility. According to Boulet et al [4] and Hallock et al [17], nowadays, a large number of trainees complete some part of their medical training in other countries. Schwarz and Wojtczak [18] claimed there is significant difference in medical education structure of different countries. For example, in Europe, a medical student of fourth year is equivalent to the second year medical students of the USA. Similarly, the timeframe of completing medical education varies in different countries. For instance, Blasco et al [19] found that in Brazil, after completing the high school, one can become a doctor in just 6 years. Four years are spent for studying theory and learning patient interactions and the next two years are spent in surgical and clinical rotations. Nevertheless, if a doctor decides to specialize then he or she needs to undergo residency after 6 years. If the specialisation is related to surgery or internal medicine then the doctor has to spend 2 to 3 years but if it is about urology or neurosurgery then the doctor has to spend 5 to 6 more years, which makes the total years of medical education around 12 or 13. Similarly, Ten Cate [20] stated that in Netherlands and in many EU countries, a student needs to do a 3 years BSc programme after high school. This programme is consisted of theory and practical interactions with patients; then, three years are spent for MSc: one year for junior internship and one year for senior internship, six months are spent for 2 elective internship and the last 6 months in

obligatory research internship, then finally, a student becomes an MD. Moreover, before starting practice, a student has to go through a residency period of 3 to 6 years. Hence, the total years of medical education are 12. On the contrary, Supe and Brudick [21] argued that in

India, after school, a student needs to complete a 4 ½ years MBBS programme and 6 more years for specialisation, the total years of education are 11. In contrast, medical education in the USA requires 12 to 15 years of study to become a specialist [18].

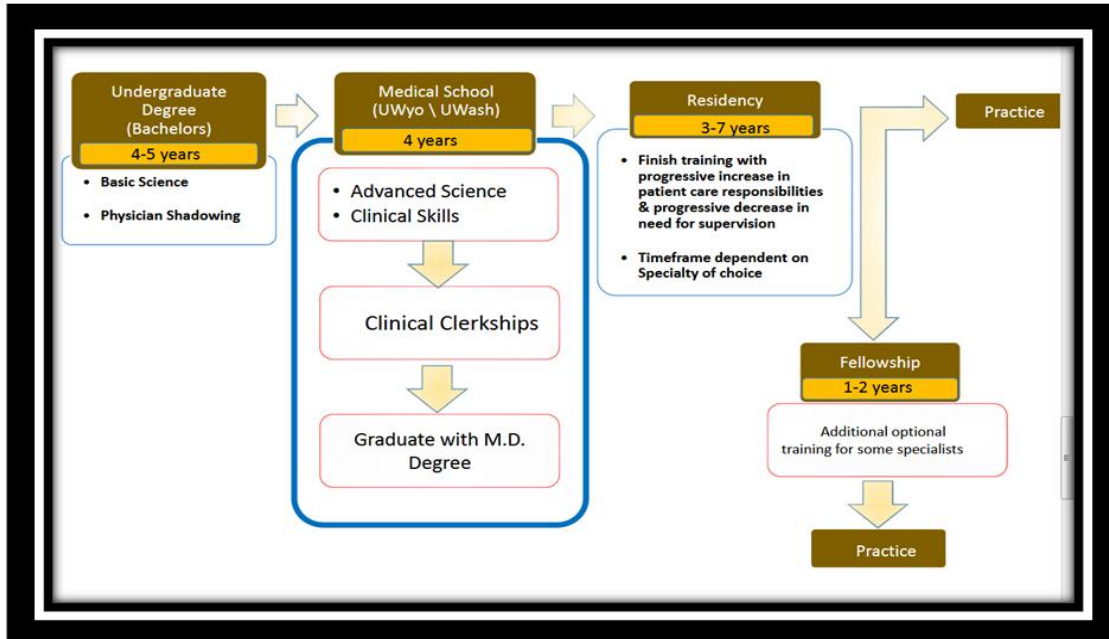


Fig. 1. A timeframe for becoming a doctor in the USA: Source (Association of American Medical College, 2017) [14]

Specialty	Length of Training (Minimum number of years of postgraduate training for eligibility for board certification)
Emergency Medicine	3-4 years
Family Practice	3 years
Internal Medicine	3 years
Pediatrics	3 years
Obstetrics-Gynecology	4 years
Pathology	4 years
Psychiatry	4 years
General Surgery	5 years
Neurological Surgery	6 years (includes 1 year of general surgery)
Orthopaedic Surgery	5 years (includes 1 year of general surgery)
Otolaryngology	5 years (includes 1 year of general surgery)
Urology	5 years (includes 1 year of general surgery)
Plastic Surgery	5-6 years (includes 3 years of general surgery)
Anesthesiology	3 years plus PGY-1 Transitional/Preliminary
Dermatology	3 years plus PGY-1 Transitional/Preliminary
Neurology	3 years plus PGY-1 Transitional/Preliminary
Ophthalmology	3 years plus PGY-1 Transitional/Preliminary
Physical Medicine	3 years plus PGY-1 Transitional/Preliminary
Diagnostic Radiology	4 years plus PGY-1 Transitional/Preliminary
Radiation Oncology	4 years plus PGY-1 Transitional/Preliminary
Transitional/Preliminary	1 year

Fig. 2. Residency period according to disciplines [1]

### 3.4 Comparison of Annual Salary

It is true that the salaries of many doctors are comparatively very high. In the USA, a family physician earns minimum \$174, 772 yearly and some physicians earn up to \$294,335 yearly. On the contrary, the yearly salary of an aerospace engineer is maximum \$151,000 and architect' salary is \$119,400 yearly [2,22]. It has been mentioned earlier that many computer programmers, musicians or signers and sportsmen are earning millions of dollars yearly. It is true that a medical professional earns more money than other professionals because not everyone can become a star sportsman, a great signer or entrepreneur. However, as compared to other professionals, a medical professional has to sacrifice many things such as quality time or peak productive years, love, affection, social contacts, friends and even families in some cases.

### 3.5 Importance and Management of Time

Weaver [5] argued that though management of time is possible in many professions; similarly, its equal distribution is possible, yet medical profession since its start make students too much occupied in the study of human body, medicines, equipments, clerkship, internship, practice, residency and specialization that they cannot think about anything else. First, they forget the purpose of life. One may say that to heal and cure people are the highest purposes of life. This may be true but to an extent because people adopt this profession to earn respect and money; therefore, their purpose of life is earning money. Nevertheless, money can be earned in any profession without losing relationships and making life difficult. The time is important in anybody's life. If time is compared with money, time always wins because money can be earned but time cannot be earned; it can be saved or it can be used wisely.

There are some logical reasons to criticize medical education; some of them have been discussed and some yet to be discussed. The overloaded medical curriculum and the time it required from undergraduate to postgraduate medical education and training may have negative impact which is likely to result in lack of competency, loss of motivation and finally burnout [23-25]. Many students study medical education even though they don't like it, and some may quit midway. Roshan, a Pakistani

Medical student writes in the DAWN Newspaper "two months ago, I was a medical student in the fourth year and I was going to become a doctor in just one year but I quit because I hated MBBS and I always loved astronomy" [26]. It is not strange that Roshan started medical education despite his love for astronomy; there are countries where only three professions are considered important doctors, engineers and government officers. Roshan could not take a right decision because of his family but eventually he decided to quit medical education. There are other facts as well.

### 3.6 Stress Associated with Medical Practice

Even with the extensive medical education and training, many of the doctors still remain poorly prepared for the professional life as they lack behind the ability to make correct diagnosis and start an appropriate treatment, especially when it comes to dealing with an emergency case [25,27]. According to the Lindeman et al [28], everyday a doctor kills himself and the suicide rate of doctors is the highest. The situation with female doctors is very critical and their suicide rate is higher than their male counterparts. However, most doctors don't go to this extreme but some may start drinking alcohol. Van et al [29] claimed that specifically, many surgeons cannot bear the pressure of patients' deaths and sufferings. In addition, it is a wrong idea that they become habitual to patients suffering, deaths and wounds. Harms et al [30] stated that they drink to lessen their stress. There are strong possibilities that a drunken surgeon operates someone and instead of operating patients knee may cut off the leg of the patient!

They should only choose this profession if they can bear this stress. Before becoming a surgeon, they are usually exposed to operating theatre environment and surgeries during undergraduate years & during residency training. They should realise their weakness during these stages and must not choose a surgical speciality [30].

Notwithstanding, there are many reasons for stress and not just patients' death and sufferings. Stress has great relationship with time. Some doctors cannot balance their professional and family life because of work pressure and their responsibilities. They face several domestic and professional challenges and finally they decide to quit from this world;

but a better way for them is to quit this profession [31]. Medical education affects the entire life of medical students; some important factors have been mentioned below.

### 3.7 Work Life Balance

Wiese [31] claimed that unfortunately, due to constant pressure of study, medical students are unable to balance work and life. It means equal distribution of hours for different works and responsibilities. However, for such complex studies, even the available time is insufficient. Moreover, they get married late and they have no time for developing serious relationships with anyone; therefore, they do not enjoy life. Despite having money, they cannot buy the lost moments' happiness again.

### 3.8 Purpose of Life, Family and Friends

Life is very short and individual lives around 60 to 80 years in developed countries and 50 to 70 years in undeveloped countries. Suppose the life of a person is 60 years and he or she spends 30 years in studying then he or she has only 30 years. In these 30 years diminish 7 years for sleep and other important work at home and 15 years for work as a doctor has to work almost 12 hours a day in many countries; thence, the person has only 8 years. So, this is the life! Don't they understand that they are going to die soon [32]? Moreover, there are many other professions where people have to go through intense study and they consume much time, for instance, the higher study in accounting and law. To perform mathematical calculations, developing balance sheets and budgets are highly stressful. Similarly, to remember articles and clauses and present them in the court of law is highly difficult. Nevertheless, the years of education of these professions are less time consuming and the students of these disciplines do not need to consume so much time in the study [33]. At least they have 15 to 20 years to enjoy a quality life. At least their families do not suffer. At least they have many friends and social contact.

Larson [33] claimed that all the contacts, family members and friends want time for interaction, love and get-to-gather but due to the complex nature of medical study and complex subjects such as human anatomy, pathology, biochemistry, physiology, etc, the medical student is unable to give time to all of them [33]. Hence, according to Woolf et al [34], time is the

most important element of everyone's life and not just for the medical students. Nevertheless, the complexity and difficulty of other subject is lesser than the medical education. Moreover, the duration of many studies has certain limits but this subject has an infinite nature because of new discoveries and new scientific equipments.

Larson [33] claimed that family is very important for everyone. A student before marriage has parents, brothers and sisters along with other blood relatives. Parents always think about the future of their kids; therefore, they do not ask much. Similarly, brothers and sisters have their own lives. However, when such a person gets married in later life, he or she has to face a different situation. The wife or husband has many desires and dreams but the medical professional does not have time to cater all of them. Gradually, if still they want to live together, they set some parameters for their lives. The kids also suffer in this situation as their father or mother does not have time for them. So it is a family comprised of individuals who do not know each other.

Barry and Wentzel [35] found that as compared to family, friends have secondary importance but for some people friends are more important. They can share everything with their friends. However, a good friendship is developed on mutual basis; in friendship both have to sacrifice for each other. The friendship like family requires time but the medical professional has lost his valuable and quality time in his study, experiments and practice, so the friendship ends up eventually.

### 3.9 Overview of the Discussion

Palmer [36] stated that medical education is highly time-consuming and it leaves one without many choices at the end of the day. The statistics of WHO shows that 15% more doctors are required. Moreover, the American Association of Medical Colleges' estimation exhibits that 60,000 more doctors are required and by 2025 the number would increase to 130,600. Therefore, Palmer [36] thinks that the situation is critical and stakeholders need to find a way to produce doctors in less time and with minimum costs. However, if number of years of medical education can be reduced, then probably it would become a better option of study for many students. Recently, according to Caplan et al [37], some universities such as NYU, Texas Tech, the University of California

and Mercer University in Georgia have launched a three-year training programme, instead of four-year medical training programme; however, this just reduces one year. Nevertheless, Emanuel and Fuchs [38] put forth an interesting idea of reducing 30% of each stage of medical education.

#### 4. CONCLUSION

The purpose of the article is not to criticise medical profession; instead, it discusses that this field of education requires much time because of its complexity and seriousness. On one hand, it is related to human health; on the other hand, it puts much responsibility on an individual and many individuals are incapable of taking such responsibilities. People must study this subject but they should take decision after in-depth analysis and understanding. Doctors are very important for the society but the trend of everybody becoming doctors is not justifiable.

#### NOTE

In part II of this burning issue, I will present a new model of medical education that I hope will change the future trends, if implemented properly.

#### CONSENT

It is not applicable.

#### ETHICAL APPROVAL

It is not applicable.

#### COMPETING INTERESTS

Author has declared that no competing interests exist.

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