Editorial

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The Experiences of an Azerbaijani Student to Attainment of Medical Education in United States: From Baku to Charlottesville

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The medical education system in United States is constantly changing. Due to recent healthcare legislation and arising need for physicians, there has been much needed innovations in graduate medical education system. Currently, there are 141 accredited medical doctor (MD)-granting institutions and 31 doctor of osteopathy (DO)-granting medical institutions. Despite of the end goal of reaching Liaison Committee on Medical Education (LCME) accredited postgraduate training program; each institution has its own unique philosophy of graduate medical program. Approaches to learning material and professor selection are also dependent on school's average (United States Medical License Exam) scores as well as the research funding provided by the government.

This article is mainly intended to educate the international students on the pathway that needs to be navigated in order to gain acceptance to medical school and the steps necessary to land a successful post-graduate resident training program. Caution must be taken to not misinterpret these steps as a guide to enter medical residency training after completing medical school abroad as these have different application system and residency selection criteria.

Keywords: training, teaching, curriculum, education

About the Authors

Rauf Shahbazov graduated from the Azerbaijan Medical University and completed general surgery residence in Baku, Azerbaijan. He trained further in King Faisal Hospital in Kingdom of Saudi Arabia and passed required exams for Royal College of Surgeons in Edinburgh. He obtained Diploma of Clinical Surgery in General (known as MRCS Ed), as well as Completion of Surgical Training Certificate from Intercollege Committee of Royal Colleges in United Kingdom. Interest in transplant surgery brought him to the transplant program at Baskent University in Ankara, Turkey. He trained as a transplant surgeon and obtained his European Board of Surgery Diploma in Porto. Rauf Shahbazov is a transplant surgeon who currently works at the University of Virginia Medical Center in Charlottesville.

Feredun Azari is a 4th year medical student attending University of Virginia School of Medicine. He was born in Baku, Azerbaijan in 1991 and attended elementary and middle school prior to moving to Canada and USA. He completed high school in Virginia and matriculated to George Mason University. While at George Mason, he was engaged in multiple events hosted by the Azerbaijani diaspora both locally and within the university community itself. Due to his academic achievements, he was selected for the dean's list during each of the semesters he was matriculated. He obtained the degree in Bachelor of Chemistry prior to matriculating at University of Virginia Health System where he received multiple honors and awards due to his performance during first three years. Feredun is interested in enrolling at a general surgery residency program next year.

Getting into Medical School

The opinions of the American and international public regarding obtaining medical education in the United States and Canada are skewed. This stems from grossly misrepresented career paths, which are portrayed in the media and various television shows. The difference in opinion is even more prevalent amongst those who do not reside in the United States. The purpose of this paper is to lay out a pathway that is taken by an average physician who attains his or her MD/DO degree in United States. Also, there is a unique experiences about the proposals of the education systems in United States, Canada, and Azerbaijan provided by the authors .

Currently, according to Liaison Committee on Medical Education (LCME) and American Association of Colleges of Osteopathic Medicine (AACOM), which accredits medical schools in United States, there are 141 medical doctor (MD) schools and 31 doctor of osteopathy (DO) schools [1,2]. The number of these schools are projected to increase in the near future [3]. In 2013, there was a record: higher than 52,550 applicants and approximately 20,000 first time enrollees in medical schools in United States alone (Figure 1) [4]. Despite these numbers, there are significant insufficiency of physicians in the country which constantly attempted to be addressed by recent healthcare legislatures.

How does the application system differ among different countries? It is imperative to understand that the whole application process in USA and its logistics are completely different than that of Azerbaijani or European system. For example, Azerbaijan Medical University accepts students after completion of secondary high school education and the national entrance exams. The average age of matriculation is eighteen.

Even though, each school differs in their admission requirements, few characteristics remain universal. Most student enrolling in medical school usually have at least a Bachelor's degree in their field of choice and the presence of Master's degree or Doctoral degree is not uncommon. Given the requirement for particular credits in chemistry, physics, math, and biology; most students pursue degree in biology or chemistry [5]. However, there are no restrictions on the degree pursued with students obtaining diplomas in arts, humanities, and liberal arts as long as they complete the required classes mandated by their medical school of choice. Student's performance during undergraduate years and their accomplishments in classes are the primary determinants of success of entrance to medical school [5,6]. Due to these requirements, the average age of matriculation is in the low to mid 20's at most medical schools. At the time of this paper, the average age of matriculation at author's medical school was 26.8. It is important to note that there are no age limits in the admission process. This allows the individuals with significant work experience to enter the medical field or serve as a pathway to career change.

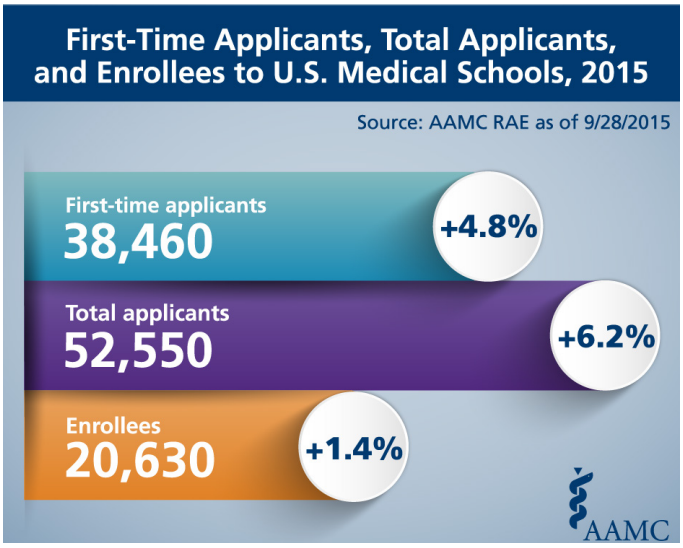

Figure 1.
AAMC data regarding medical school applicants.
Retrieved from: https://www.aamc.org/newsroom/newsreleases/446400/applicant-and-enrollment-data.html

For students whose English is not the first language or who were born abroad completion of TOEFL examination may be required despite the fact that many entrance exams include critical reading and/or writing as an essential component. This requirement also differs amongst schools.

Usually, during third year of undergraduate education, students take the The Medical College Admissions Test (MCAT), which is a requirement for all US medical schools. The scores attained on this test along with the grades in individual classes determine the competitiveness of an applicant [8]. Average MCAT scores in 2013 were 25.2 amongst the 90,000 who took the exam with average matriculation score of 31.2 [9,14]. Since grading and strength of education differ amongst undergraduate colleges, MCAT serves as a standardized marker for all students to ensure fairness and objective of assessment (Figure 2).

The details of MCAT will not be discussed here as there have been significant overhauls to the exam in the latter part of 2015 with the change of scoring and exam administration.

Apart from grades and test scores, important characteristics of the applicants include their race, extracurricular activities, research experience, publications, state of residence and work/volunteering experience.

Choosing the Medical School

Once all the prerequisites are completed, the decision to chose medical school starts. This is one of the most anxiety provoking times as there no certainty of interview invitations and no ınformatıon about where one will spend next four years of his/her life.

The first decision that one needs to make is whether to apply to DO or MD schools. What is the difference? DO or Doctor of Osteopathy is relatively unique degree offered by osteopathic schools in the US. Frankly, the knowledge regarding these schools is low in the international level and associated with significant stigma amongst those blinded by ignorance. Graduates with DO degrees have the same ability and opportunities to train at residency programs which are accessible to Allopathic programs (MD). Once they function as a licensed physician they carry the same responsibilities and privileges as an MD partner. Osteo-

Table 1. The demographic differences between medical school students in US and Azerbaijan. Data obtained from AAMC and Azerbaijan State Medical University.

Matriculation Differences Between USA and Azerbaijan

Country	Age	Prior Degrees	Tuition (per year)	Combined Degrees	Duration of study
USA	24	Yes	$32,889	Yes	4
Azerbaijan	18	No	$5000	No	6

pathic schools primarily focus on holistic approach to education and receive a primary care focused training [11]. However, as mentioned previously, they can attain any residency training as they wish.

Once the type of degree is decided, then one needs to consider their academic standing, their state of residence, and the personal desire to live in a particular place. State institutions prefer to accept in-state residents and these students do have a lower tuition rates. However, the state of residency has minimal merit in those applying to private medical universities. So, tuition does come into play in decision making process. As evident on Table 1, average medical school-tuition costs $50,000 per year. The cost is not a limiting factor as all US citizens and permanent residents are offered government loans to mitigate the costs. One needs to take into account the interest rates and total debt accrued over 20-30 years it takes to repay the loans [12].

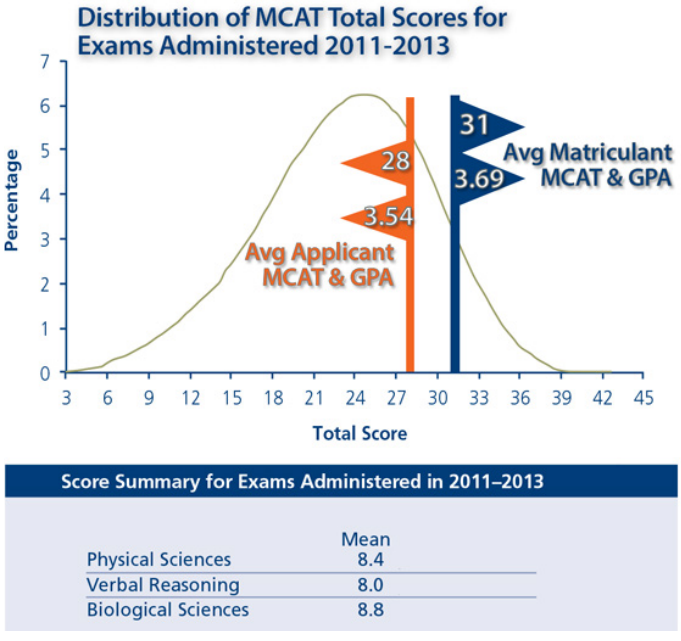

Figure 2.
The average MCAT and Grade Point Average for applicants as well as those who matriculated in medical school. Source: AAMC. Retrieved from: http://blog.trinityschoolofmedicine.org/blog-compare_Caribbean_-Medical_Schools/bid/108546/More-Than-an-MCAT-Score-Uncovering-an-Applicants-Potential-at-Trinity-SOM

Applicants do have the ability to apply for combined MD/PhD, MD/MBA, MD/JD programs. However, the open spots for these programs limited and are competitive (Table 1)

Rest of the process is standardized with interviews at institutions who deem one competitive enough. At the end of the process, the student has to make a selection at a universities which have accepted him or her.

During Medical School

The medical education experienced by each medical student is different. This is primarily due to differing philosophies exhibited by different universities. The examples provided here are from author's personal experience and does not mean to represent or encompass the teaching method of all medical schools. The common theme for all medical students are two years or preclinical studies which are primarily focused on basic sciences. Then in order to start clinical year, most students are required to take and pass USMLE Step 1 (united state medical license examination). In order to graduate, students need to pass both the USMLE Step 2 Clinical Knowledge and the USMLE Step 2 Clinical Skills exam, which are taken during 4th year of medical school. Some residency programs require that you demonstrate a passing score in both before being considered at a program.

Some medical schools, such as the authors', have decided to condense the basic science material into 1.5 years instead of the traditional two years. This allows extra 6 months towards the student's final year to pursue his or her own interest. However, this approach is new and not universal across all schools. The classes are dealt with 12 different systems of the body, which are taught at 4-6 week intervals. During each class, material covered includes relevant pathophysiology, pharmacology, anatomy, and treatment of various diseases. For example, during study of cardiovascular system one would learn about the all above mentioned topics as it relates to that organ unit. Furthermore, there are schools that teach the classical 1st year basic science and anatomy while deferring pathology for second year of medical education.

Furthermore, during the first two years of schooling, the students are required to undergo various simulated clinical scenarios, patient interview technique workshops, and physical exam workshops , which are conducted on a weekly basis [7]. This is meant to prepare the student for actual clinical encounters during third year of medical school. Simulations are done on the latest technologically advanced mannequins which transmit real time physiologic data to the room monitors. The interviews and physical exam preparation are conducted on specifically trained standardized patients. Passing grade are required in order to be able to sit for the USMLE exams.

One would say that one of defining aspects of medical school are the USMLE exams. This is especially true regarding Step 1 exam. Many residency programs invite their potential candidates based on their Step 1 score. Also, the competitive specialties such as orthopedics, plastics, and neurosurgery have a relatively higher score cut offs for their applicants (Table 2) [15]. According to the National Residency Match Program, in 2014, family medicine had average step 1 score of 218 while otolaryngology had

Table 2. NRMP data indicating characteristics of residency applicants. Source: NRMP

Characteristics of residency applicants in 2014

Measure	U.S. Seniors		Independent Applicants	
	Matched (n=15,127)	Unmatched (n=1,245)	Matched (n=8,633)	Unmatched (n=7,682)
1. Mean number of contiguous ranks	11.5	5.3	6.9	2.8
2. Mean number of distinct specialties ranked	1.2	1.6	1.3	1.5
3. Mean USMLE Step 1 score	230	221	225	213
4. Mean USMLE Step 2 score	243	231	234	220
5. Mean number of research experiences	2.7	2.9	1.8	1.9
6. Mean number of abstracts, presentations, and publications	4.2	3.8	3.6	3.9
7. Mean number of work experiences	3.0	3.0	4.0	4.8
8. Mean number of volunteer experiences	7.1	7.2	4.7	3.7
9. Percentage who are AOA members	16.0	5.8	n/a	n/a
10. Percentage who graduated from one of the 40 U.S. medical schools with the highest NIH funding	32.7	21.5	n/a	n/a
11. Percentage who have Ph.D. degree	3.9	2.6	n/a	n/a
12. Percentage who have another graduate degree	15.2	17.8	n/a	n/a

n/a: The measure either does not apply to, applies to only a small percentage of, or no reliable data were available for independent applicants.

Sources. NRMP Data Warehouse; Top 40 U.S. medical schools with the highest NIH funding in measure 10 is from the NIH website (http://report.nih.gov/award/index.cfm)

average score of 248 for the matched applicants [11,12]. Nevertheless, the performance on this exam has future repercussions. For this reason, many medical school offer 6-8 week vacation time intended to study for this exam. It is understandable that international medical graduates might find this stunning as they tend to spend much more months preparing for this exam. However, it is imperative to comprehend that material taught during the first 2 years are intended to prepare for the exam.

Once the student passes the exam, he or she, embarks on one of the most exciting times of their medical training; the hospital ward. During these times, students rotate through Surgery, Internal Medicine, OB/GYN (obstretrics and gynecology) Neurology, Psychiatry, Outpatient Family Medicine, and Pediatric wards either at their home institution or affiliated hospitals in the area. During each rotation, students can experience the subspecialties within each specialty but LCME requires all students to complete the above mentioned rotations in order for the school to be accredited. At the end of each rotation students take a standardized test administered by the National Board of Medical Education (NBME). Passing grade is required for student to be eligible for graduation [15].

After the completion of required clinical rotations, one can choose to further experience specialty of their choosing. This allows the students to find and bond with their mentors who can provide letters of recommendations for residency [15]. There is also significant freedom allowed during 4th year of medical school. Student can choose any rotation he or she wants to participate in and this is further guided by their future career choice.

The purpose of 4th year medical school is to guide them to or confirm their clinical specialty choice. Various programs across different specialties have multiple requirements for the application process. However, these are done through a standardized system and is matter of discussion elsewhere.

Conclusion

The journey to medical school in US is significantly different than that of Azerbaijan. One has to prove that they can handle vigorous academic material through their undergraduate performance. Prior to matriculation, potential student should acquire a Bachelor's degree and complete all the coursework required. Next essential step is to perform successfully on the MCAT examination, which will determine his or her competitiveness at getting accepted to medical school. Once accepted to medical school, student undergoes approximately 2 years of basic science education, which is followed by USMLE Step 1 examination. Scores on Step 1 can determine future career choice but is also dependent on other parameters. During third year students undergo training in the hospital setting and have to complete nationally required clinical rotations. Finally, as a fourth year, students have the freedom to choose their clinical setting and start working towards acceptance for their residency program. The education and training behind medicine is constantly changing and there are new methods employed on a daily basis to ensure success of medical students.

Finally, it is to author's disappointment that the shortage

of Azerbaijani physicians thoroughly evident. At the time of submission of this paper, the author was the only Azerbaijani national who has ever attended his medical institution (in US). Even though, there are no studies documenting the number of Azerbaijani MD's in which institution?? the best estimate that is obtained through collaboration puts the number at low 20's. What is more striking is the fact that the neighboring countries (Turkey, Russia, Iran, Georgia, Armenia) have professional medical associations that are actively organizing events between the native countries and US. Each of those associations have scholarships to support their members financially and organize events to encourage collaboration. Unfortunately, this is lacking from the Azerbaijani physician diaspora. Authors hopes that initiation of collaboration with medical institutions between US and Azerbaijan could help professional development of doctors in globalized world.

References

1. Liaison Committee on Medical Education (LCME) - Leadership - Organization of Student Representatives (OSR) - Member Center - AAMC [Internet]. [cited 2016 Jul 9]. Available from: https://www.aamc.org/members/osr/committees/48814/reports_lcme.html
2. U.S. Colleges of Osteopathic Medicine [Internet]. [cited 2016 Jul 9]. Available from: http://www.aacom.org/become-a-doctor/us-coms
3. Medical School Enrollment to Approach 30 Percent Increase by 2019 - News Releases - Newsroom - AAMC [Internet]. [cited 2016 Jul 9]. Available from: https://www.aamc.org/newsroom/newsreleases/431036/20150430.html
4. Record Number of Med Students for 2013-2014 [Internet]. Medscape. [cited 2016 Jul 9]. Available from: http://www.medscape.com/viewarticle/813306
5. Admission Requirements for Medical School [Internet]. [cited 2016 Jul 9]. Available from: https://students-residents.aamc.org/choosing-medical-career/article/admission-requirements-medical-school/
6. Cherry MG, Fletcher I, O'Sullivan H, Dornan T. Emotional intelligence in medical education: a critical review. Medical Education. 2014 May;48(5):468–478.
7. Okuda Y, Bryson EO, DeMaria S, Jacobson L, Quinones J, Shen B, Levine AI. The Utility of Simulation in Medical Education: What Is the Evidence? Mount Sinai Journal of Medicine: A Journal of Translational and Personalized Medicine. 2009 Aug 1;76(4):330–343.
8. Saguil A, Dong T, Gingerich RJ, Swygert K, LaRochelle JS, Artino AR, Cruess DF, Durning SJ. Does the MCAT predict medical school and PGY-1 performance? Mil Med. 2015 Apr;180(4 Suppl):4–11. PMID: 25850120
9. Yoho RM, Antonopoulos K, Vardaxis V. Undergraduate GPAs, MCAT scores, and academic performance the first 2 years in podiatric medical school at Des Moines University. J Am Podiatr Med Assoc. 2012 Dec;102(6):446–450. PMID: 23204195
10. Applicants and Matriculants Data - FACTS: Applicants, Matriculants, Enrollment, Graduates, MD/PhD, and Residency Applicants Data - Data and Analysis - AAMC [Internet]. [cited 2016 Jul 9]. Available from: https://www.aamc.org/data/facts/applicantmatriculant/
11. Shannon SC, Teitelbaum HS. The status and future of osteopathic medical education in the United States. Acad Med. 2009 Jun;84(6):707–711. PMID: 19474542
12. AAMC Tuition and Student Fees Reports [Internet]. [cited 2016 Jul 10]. Available from: https://services.aamc.org/tsfreports/
13. Medical School Applicants, Enrollees Reach New Highs - News Releases - Newsroom - AAMC [Internet]. [cited 2016 Jul 10]. Available from: https://www.aamc.org/newsroom/newsreleases/446400/applicant-and-enrollment-data.html
14. Meyer S. More Than an MCAT Score? Uncovering an Applicants Potential at Trinity SOM [Internet]. [cited 2016 Jul 10]. Available from: http://blog.trinityschoolofmedicine.org/blog-compare_Caribbean_-Medical_Schools/bid/108546/More-Than-an-MCAT-Score-Uncovering-an-Applicants-Potential-at-Trinity-SOM
15. Charting-Outcomes-2014-Final.pdf [Internet]. [cited 2016 Jul 10]. Available from: http://www.nrmp.org/wp-content/uploads/2014/09/Charting-Outcomes-2014-Final.pdf