

Neurophobia among medical students

Ahmad A. Abulaban, MBBS, **Tabir H. Obeid**, FRCPC, **Hussein A. Algahtani**, MD, FRCPC, **Suleiman M. Kojan**, MD, FRCPC, **Ali M. Al-Khathaami**, MD, FRCPC, **Abdulrhman A. Abulaban**, MBBS, **Maryam F. Bokhari**, MBBS, **Anas A. Merdad**, MBBS, **Subaib A. Radi**, MBBS.

ABSTRACT

الأهداف: تقييم موقف طلاب الطب والأطباء حديثي التخرج من التخصص في الأمراض العصبية.

الطريقة: تم توزيع استبيانات على 422 طالب وطبيب حديث التخرج في جامعة الملك عبد العزيز، جدة، المملكة العربية السعودية خلال الفترة من سبتمبر إلى ديسمبر 2012م. شملت هذه الاستبيانات على المعلومات العامة للطلاب أو الطبيب و12 سؤالاً لتقييم سلوكهم تجاه تخصص المخ والأعصاب باستخدام مقياس ليكرت.

النتائج: كان معدل الاستجابة للاستبيان هو 70.3%. متوسط عمر المشاركين في الدراسة هو 22.35 (SD+/-1.28) سنة، ونسبة الذكور كانت 46.2%. بالرغم من أن 31.3% من الطلاب لم يقرروا بعد مجال تخصصهم المستقبلي، اختار 11.8% تخصص المخ والأعصاب كترغيب أولى في المستقبل. 29.6% لم يكونوا راضين عن طريقة تدريس تخصص المخ والأعصاب في جامعتهم، و84.4% وجدوا أن هذا التخصص صعب، و42.7% من المشاركين اعتبروا أن معلوماتهم ومعرفتهم فيه غير كافية. لقد وجدنا أيضاً أن طلاب الامتياز كانوا أقل من غيرهم احتمالية في اختيار تخصص المخ والأعصاب كوظيفة لهم ($p=0.001$).

الخاتمة: أغلب المشاركين في الدراسة كان لديهم موقف سلبي تجاه تخصص المخ والأعصاب، لذا ينبغي تطوير استراتيجيات وطرق حديثة لتحسين نظرة الطلاب والأطباء تجاه هذا التخصص المهم.

Objective: To assess the attitude of medical students and junior physicians toward neurology.

Methods: A self-administered, previously validated, questionnaire was distributed among 422 students and junior physicians at King Abdulaziz University, Jeddah, Saudi Arabia from September to December 2012. In this cross-sectional study, the questionnaire

included demographic data and 12 statements to examine attitudes toward neurology using a Likert scale.

Results: The response rate among participants was 70.3%. The mean age was 22.35 (SD+/-1.28) years. Males comprised 46.2%. While 31.3% of students had not decided regarding their future career, 11.8% selected neurology as their first possible choice. Whereas 29.6% of students were not satisfied with their neurology teaching experience, 84.4% found neurology difficult, and 42.7% of the whole group thought that their neuroscience knowledge was insufficient. Advanced clinical year students (namely, interns) were less likely to consider neurology as a career choice ($p=0.001$).

Conclusion: Most of the students had an unfavorable attitude toward neurology on the Likert scale. New strategies are needed to change students' attitude toward this demanding specialty.

Neurosciences 2015; Vol. 20 (1): 37-40

From the Neurology Division (Abulaban, Obeid, Algahtani, Kojan, Al-Khathaami, Bokhari) Department of Medicine, King Abdulaziz Medical City, National Guard Health Affairs, Riyadh, and the Department of Medical Education (Abulaban, Merdad, Radi), College of Medicine, King Abdulaziz University, Jeddah, Kingdom of Saudi Arabia.

Received 27th April 2014. Accepted 6th September 2014.

Address correspondence and reprint request to: Dr. Ahmad A. Abulaban, Neurology Division, Department of Medicine, King Fahad National Guard Hospital, King Abdulaziz Medical City, PO Box 377033, Riyadh 11335, Kingdom of Saudi Arabia. E-mail: neuroahmad@yahoo.com

Disclosure. The authors declare no conflicting interests, support or funding from any drug company.

Neurological disorders comprise 6.4% of the global health burden, and contribute to 12% of global mortality.¹ A large proportion of these disorders are chronic, outpatient based, and typically cared for in the community by general medical staff.²⁻⁶ Hence, it is important that medical students, and eventually medical doctors of different specialties, become more familiar and comfortable with dealing with these common diseases. Neurophobia, or the fear of neuroscience and clinical neurology, is well known among medical students and junior physicians.² Neurology is considered, throughout the world, as the most difficult and the least understood medical specialty.²⁻⁵ Students, residents, and general practitioners display less confidence when dealing with neurological cases compared with other medical conditions.^{5,7} This has been attributed to limited patient exposure, difficult neuroanatomy, complex clinical examination, insufficient teaching, and diagnostic complexity.^{3,5,6,8} In Saudi Arabia, the attitude of medical students toward neurology and the extent of neurophobia is not well explored. Our study aimed to examine this issue and its extent among Saudi medical students.

Methods. We conducted a cross-sectional survey of 422 interns and medical students of different levels, at 6 different medical schools in Saudi Arabia. All medical students and interns, available during the period between September and December 2012 were asked to participate. Ethical approval to conduct the study was obtained from our local institutional review board. Data was collected using a self-administered questionnaire that had been previously validated.⁴ Around 63% of the participants were from a neurology teaching conference for non-neurologists. While the rest were gathered from the college of medicine after their academic lecture.

The tool consisted of 2 parts. The first part collects demographic data (Table 1), including gender, age, year of medical school, and future career choice. The second part examined the attitude of the participant toward neurology using a Likert scale of 12 statements (Tables 2 & 3). Experts were available on-site to clarify any ambiguity.

Data was analyzed by performing descriptive statistics. In addition, chi-square, and T-test were used for the analysis. Differences were considered to be statistically significant at $p \leq 0.05$. Data was analyzed using the Statistical Package for Social Sciences (SPSS Inc., Chicago, IL, USA) version 16.

Results. Among 600 medical students and interns, 422 completed the questionnaire with a response rate of 70.3%. The demographic data is shown in Table 1. The

mean age was 22.35 years (± 1.28), and 46.2% were male students. The survey included students from 4 different medical schools in Saudi Arabia, including King Abdulaziz University (KAU) (91.2%), Umm Al-Qura University (UQU) (4.7%), King Khalid University (KKU) (2.6%), and Ibn Sina College (1.4%). Two hundred and fifty-nine students (61.4%) had a relative in the medical field, and 129 (30.6%) had a family member with neurological disease.

Most (85.5%) of our participants agreed that neurology is a difficult subject, and 91.5% agreed that neurological diseases are complicated and difficult. Only 11.8% of our participants would consider neurology as a choice for their future career. In our sample, females considered neurological signs difficult to be elicited ($p=0.002$), and they were more likely not to consider neurology as a future career (38.8%) as compared with males (27.2%) ($p=0.002$) (Table 2). Advanced clinical year students (namely, interns) were more likely not to consider neurology as a career choice ($p=0.001$) (Table 3).

Most participants (70.4%) attributed their lack of interest in neurology to a bad teaching experience. In addition, 82.5% agreed that neurological examination is complicated, and 84.6% agreed that neurology lacks curative treatments for its patients. Furthermore, most (87.2%) agreed that dealing with neurological patients

Table 1 - Demographic data of the participants among medical students and junior physicians in Saudi Arabia.

Demographic data	Frequency (n=422)	Percentage (%)
<i>Gender</i>		
Male	195	(46.2)
Female	227	(53.8)
<i>University</i>		
Ibn Sina	6	(1.4)
Umm Al-Qura	20	(4.7)
KAU	385	(91.2)
KKU	11	(2.6)
<i>Year</i>		
4 th	140	(33.2)
5 th	68	(16.1)
6 th	165	(39.1)
Intern	49	(11.6)
<i>Future career</i>		
General practice	8	(1.9)
Subspecialty	111	(26.3)
Neurology	50	(11.8)
Not decided	132	(31.3)
General specialty	121	(28.7)

KAU - King Abdulaziz University, KKU - King Khalid University

Table 2 - Medical students' responses to questions regarding their attitude toward neurology according to gender.

Questions	Male n=195 (46.2%)		Female n=227 (53.8%)		P-value	Total N=422	
	Disagree %	Mean score	Disagree %	Mean score		Disagree %	Mean score
My neurology teaching experience is strong	27.2	2.2	31.7	2.0	0.573	29.6	2.1
I consider neurology a future career option	27.2	2.3	38.8	2.1	0.002	33.2	2.2
Neurological signs are difficult to elicit consistently	11.9	2.3	22.7	2.1	0.025	17.5	2.2
In neurology, limited treatments are available	13.5	2.6	17.9	2.5	0.137	15.4	2.5
Neurological diseases are complicated and difficult	8.7	2.7	9.0	2.6	0.633	8.8	2.6
Neurological disorders are challenging and interesting	10.0	3.0	8.1	3.0	0.381	8.8	3.0
Patients are uncooperative and difficult to examine	22.2	2.3	18.4	2.2	0.112	19.9	2.2
Most neurological diseases have poor outcome	11.2	2.6	12.1	2.5	0.298	11.4	2.5
Dealing with patients with neurological disorders is more difficult emotionally than non-neurologic diseases	11.5	2.7	14.1	2.6	0.123	12.8	2.7
Neurology requires a very long training time	5.2	3.1	4.4	3.1	0.968	4.7	3.1
My knowledge in Neurology is sufficient	37.6	1.9	47.6	1.7	0.159	42.7	1.8
Neurology is difficult	10.9	2.6	17.8	2.4	0.114	14.5	2.5

Possible response are: (1) disagree, (2) agree somewhat, (3) agree moderately, and (4) agree strongly. Maximum score per question = 4.

Table 3 - Medical students' responses to questions regarding their attitude toward neurology according to year level.

Questions	4th year n=140 (33.2%)		5th year n=68 (16.1%)		6th year n=227 (53.8%)		Intern n=49 (11.6%)		P-value
	Disagree %	Mean score	Disagree %	Mean score	Disagree %	Mean score	Disagree %	Mean score	
My neurology teaching experience is strong	16.4	2.4	32.4	2.1	41.2	1.8	22.9	2.3	<0.001
I consider neurology a future career option	17.9	2.5	24.2	2.4	45.7	1.9	47.9	1.9	<0.001
Neurological signs are difficult to elicit consistently	10.8	2.3	22.4	2.1	23.3	2.2	12.5	2.3	0.094
In neurology, limited treatments are available	11.0	2.5	25.0	2.3	17.0	2.5	12.8	2.8	0.064
Neurological diseases are complicated and difficult	7.1	2.7	13.4	2.5	9.2	2.6	6.4	2.6	0.636
Neurological disorders are challenging and interesting	5.1	3.2	7.6	3.2	13.4	2.8	6.5	3.0	0.007
Patients are uncooperative and difficult to examine	15.8	2.3	25.4	2.2	19.6	2.3	27.7	2.1	0.613
Most neurological diseases have poor outcome	13.5	2.4	17.6	2.4	10.4	2.6	2.2	2.9	0.031
Dealing with patients with neurological disorders is more difficult emotionally than non-neurologic diseases	11.0	2.6	14.7	2.7	15.2	2.6	8.3	2.9	0.435
Neurology requires a very long training time	3.6	3.2	8.8	3.0	3.1	3.1	8.3	2.9	0.177
My knowledge in Neurology is sufficient	32.6	1.9	50.0	1.7	49.4	1.7	39.6	1.9	0.076
Neurology is difficult	13.1	2.6	13.2	2.5	13.4	2.5	25.5	2.3	0.660

Possible response are: (1) disagree, (2) agree somewhat, (3) agree moderately, and (4) agree strongly. Maximum score per question = 4

has a more significant emotional impact when compared with managing other non-neurological patients, and 88.6% mentioned that neurological patients generally have a poor outcome.

Discussion. Neurophobia is already established as a concerning phenomenon among different

medical schools worldwide.²⁻⁴ This study addresses this issue in a specialty that constantly ails from the lack of trained physicians. Around 85.5% of our participants considered neurology as a difficult topic that is comparable with other studies carried out on "Neurophobia" elsewhere.¹⁻⁴ In addition, most of our participants agreed that their knowledge in neurology

is insufficient with a mean, Likert scale, score of 1.8. Similarly, this was consistent with other studies carried out in the United States, Ireland, and the Caribbean islands.^{2,3}

When it came to the reasons behind this negative perception of neurology, many students attribute this to lack of knowledge in neurology, poor teaching, complex examination techniques, and emotional difficulty in dealing with neurological patients. Echoing other similar reports, lack of knowledge seems to be a fairly important reason behind perceiving neurology as a difficult specialty.^{2,4} On a 4-point Likert scale, a mean score of 1.8 was found when students asked, “my knowledge in neurology is sufficient” (Table 2). This may be attributable to poor teaching experience. Our students scored a mean of 2.1 on the Likert scale when asked whether their teaching experience was strong and sufficient. This was also found to be a significant factor when compared with other international studies.¹⁻⁵ Similarly, clinical neurological examination was found to be an important factor among British and Caribbean students, who perceived neurology as difficult.^{2,4} This was also found to be an important factor in our study and could be a reason that made our participants choose poor teaching as a factor, as usually, the vastness of different techniques in neurological examination prevents instructors from investing enough time to cover all aspects of this topic. Although not supported by other studies, it is logical to think of the emotional impact on students when dealing with debilitated neurological patients.

Only 11.8% would consider neurology as their future career. Most of our participants (84.6%) agreed that there are very limited treatments available to help neurological patients, and also most (88.6%) agreed that neurological patients generally have poor outcome. These 2 latter factors would probably explain why students feel reluctant to choose neurology as their future specialty. A Irish study³ that compared different students of different clinical levels, including residents, found no difference when comparing students and residents in their attitude toward neurology. However, in our study, fourth and sixth year students were found to have slightly more positive attitudes when compared with their junior peers, and they were more likely to choose neurology as their future career.

The limitation of our study is inclusion of students that are mainly from one university. A more heterogeneous population is needed to evaluate and compare different institutions. Also, this study did not take into consideration the opinion of students on how to improve their experience in neurology.

In conclusion, most students see neurology as a difficult subject and only a few consider it as a future career. This unfavorable attitude toward neurology could be attributed to the bad teaching experience students have encountered, complexity of neurological examination, as well the lack of curative treatments. New strategies and teaching methods are needed to change students' attitude of this demanding specialty. The use of technology with a computer based 3D simulator can make neuroanatomy more understandable and enjoyable. Widely available, handy, high tech gadgets, such as smart phones, and small tablets would help in adapting such methods.⁹⁻¹¹

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