Research Article
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Evaluation of knowledge, attitude and perception of medical, dental and pharmacy students in AIMST University on the progress of amyotrophic lateral sclerosis (ALS)

Abstract

The objective of the study is to evaluate the knowledge, attitude and perception of medical, dental and pharmacy students in AIMST University on the progress of Amyotrophic Lateral Sclerosis (ALS). Collection and organization of data were analyzed and interpreted accordingly. A cross–sectional observational study on a convenient random sample of 268 students from AIMST University was conducted by using pretested and validated questionnaires to gather information on the attitude, knowledge and perception of medical, pharmacy and dental students. Of the 268 respondents in AIMST University, 85 of the respondents were male (31.7%) and 183 of them were female (68.3%). For the evaluation of attitude, majority of respondents from all the three faculties were giving positive attitude. Results showed that 171 (93.4%) of females were giving positive attitude more than the males. For the evaluation of knowledge and perception, males (38.8%) were having more adequate knowledge than females (30.6%). Among all races that participated in the study, Indians (36.0%) were having the most adequate knowledge than other races on ALS disease. Among the Faculty of Medicine, Pharmacy and Dentistry, Faculty of Medicine (37.3%) was having the most adequate knowledge than other faculties. Year 3 and Year 4 respondents were having almost same percentage of adequate knowledge that was 33.7% and 33.8% respectively. In addition, non–hostellers (48.2%) were having more adequate knowledge than hostellers (26.5%). In the aspect of educational background, respondents from A–Level (57.1%) were having the most adequate knowledge among other educational backgrounds.

Keywords: amyotrophic lateral sclerosis, neurodegenerative disease, symptoms, muscles, limbs, risk factors, physical therapy

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Introduction

What is Amyotrophic Lateral Sclerosis (ALS)? It is also known as "Lou Gehrig's Disease and Charcot disease". It was first discovered by Jean–Martin Charcotin, a French neurologist in 1869, but Lou Gehrig brought national and international attention to this disease in 1939.[1] Lou Gehrig was an American professional baseball first baseman but at last he ended up his career due to his illness.[2] However, the disease is still named after him Amyotrophic lateral sclerosis (ALS) can be defined as a progressive neurodegenerative disease which affects nerve cells located in the brain and the spinal cord.[3] Motor neurons reach from the brain to the spinal cord and from the spinal cord to the muscles throughout the body. When there is progressive degeneration of motor neurons in ALS, it is consequently leads to their death.[4] Death of motor neurons causes the brain lost the ability to initiate and control muscle movement. Once voluntary muscle action becomes very weak and non–functional, patients may lose the ability to move, speak, eat and breathe. Eventually, patients may become totally paralyzed in the later stage of the disease.[5] Early symptoms of ALS include increasing muscle weakness, muscle cramps and twitches, difficulty in walking or doing normal daily activities.[6] Besides, muscles used for speaking and swallowing are affected. When muscles unable to receive the signals from the motor neurons, the muscles begin to atrophy (become smaller) as well as limbs begin to look "thinner".[7] However, ALS does not affect senses, bladder or bowel control, or thinking ability.

Established risk factors for ALS include age, sex, lead exposure, heredity, protein mishandling and smoking.[8] There are two types of ALS, sporadic and familial. Sporadic ALS, which is essentially of unknown cause, is the most common form of this disease and accounts for 80 to 90% of all cases. On the other hand, familial ALS with a direct genetic linkage accounts for 10 to 20% of all cases. There is 50% chance for each offspring to inherit the gene mutation and may develop the disease in those families.[9] Recently, there is more new scientific understanding regarding the physiology of ALS although its cause is not completely understood.[10] As there is no perfect treatment for ALS today, riluzole (Rilutek), one of the FDA approved drugs, tends to focus on slowing the progression of ALS. Riluzole acts by reducing the levels of glutamate which is usually present in higher levels in ALS patients.[11] Besides, some therapies can be carried out to assist the ALS patients such as breathing care, physical therapy, occupational therapy, speech therapy, nutritional support or psychological and social support.[12]

Methodology

Study design, location, and duration

For evaluation of knowledge of medical, dental and pharmacy students on the progress of Amyotrophic Lateral Sclerosis, a self–administered anonymous validated questionnaire was used. This study was done on the participation of medical, dental and pharmacy students

in AIMST University to evaluate their knowledge on the possible causes, symptoms, therapies and management of Amyotrophic Lateral Sclerosis. In addition, their attitude towards this particular disease was determined. The study was conducted in AIMST University, 08100, Kedah, Malaysia, over a period of nine months (September 2014 to May 2015).

Sampling

The sampling was done with "Medical Students (MBBS)" in 3rd year and 4th year of AIMST University, "Pharmacy Students (B. Pharmacy)" in 3rd year and final year of AIMST University, and "Dentistry Students (BDS)" in 4th year and final year of AIMST University. Convenience sampling was done for recruiting medical, dental and pharmacy students who agreed to participate in the study, consent was taken from them and surveyed through a self–administered questionnaire. For the evaluation of knowledge of medical, dental and pharmacy students on the progress of Amyotrophic Lateral Sclerosis, a self–administered anonymous validated questionnaire was used. Multiple choice questions were designed. Face and content validity of the questionnaire was tested through pilot study. A score of 1 point was credited to each correct answer and 0 was credited to each wrong answer. More than 60% right answers were considered as adequate knowledge and below than 60% right answers were considered as inadequate knowledge. For the evaluation of attitudes and perception, statements were provided and the respondents were asked to indicate the extent to which they agree with those statements, on a 5 points Likert scale ranging from "Strongly disagree" to "Strongly agree" and scored as (strongly disagree=1, disagree=2, neutral=3, agree=4 and strongly disagree=5).

Ethical considerations

All aspects of the study protocol, including access to and the use of clinical information and demographics of respondents were authorized by the institutional medical ethics committee and the local as well as central health authorities before initiation of this study. All information on individuals were strictly protected and used for clinical research only.

Result

The study was conducted in AIMST University in three different faculties on Evaluation of Knowledge, Attitude and Perception of Medical, Dental and Pharmacy Students in AIMST University on the Progress of Amyotrophic Lateral Sclerosis (ALS). The study gave different results as follow:

Demographic information of respondents

Demographic of the study was different including gender, race, faculty, age, year of education, residence and education background. The results of this study were as follow: (Table 1).

Respondent's attitude and their demographics

3.4%) of females were having positive attitude more than 77 (90.6%) of males. Faculty of Dentistry was giving the highest positive attitude, that was 82 (96.5%) compared with other two faculties. In the aspect of year of education of the students, Year 5 students were giving the highest positive attitude, which was 43 (100.0%) compared to Year 3 and Year 4 students. All the three age groups were giving only very less percentage of negative attitude. Majority of them were giving positive attitude towards ALS disease. In addition, among 268 students that participated in this study, there was 248 (92.5%) of students of all the races giving positive attitude. 79 (95.2%) of non–hostellers were giving positive attitude more than 169 (91.4%) of hostellers. The last but not least, students having the educational background of A–Level and Diploma were giving the same percentage of positive attitude, while students having the educational background of Foundation and STPM were giving the almost same percentage of positive attitude, which were 212 (92.2%) and 24 (92.3%) respectively (Table 2).

Table 1 Demographic information of respondents

Variables	N	%
Gender		
Male	85	31.7
Female	183	68.3
Race		
Malay	2	0.7
Chinese	190	70.9
Indian	75	28
Others	1	0.4
Faculty		
Medical	83	31
Pharmacy	100	37.3
Dental	85	31.7
Age		
20–25	262	97.8
26–30	5	1.9
More than 30	1	0.4
Year of education		
Year 3	95	35.4
Year 4	130	48.5
Year 5	43	16
Residence		
Hostellers	185	69
Non–Hostellers	83	31
Education background		
A–Level	7	2.6
Diploma	5	1.9
Foundation	230	85.8
STPM	26	9.7

Respondent's knowledge and perception and their demographics

Kruskal–Wallis was used to observe difference between knowledge of the respondent's with demographics of respondents and Mann Whitney test were performed to observe difference between knowledge of the respondents and their demographics. The faculty of respondents was divided in to three groups, Medicine, Pharmacy and Dentistry. The result of Kruskal–Wallis test shows significance

difference (p–value=0.038) between knowledge possessed and faculty. Age groups of 20–25 were identified to be less knowledge (Mean rank=10.57± 2.57) as compared with students of age group of 26–30 years old (Mean rank=11.80±1.64) and more than 30 (Mean rank=14). The results of Kruskal–Wallis test shows no significance difference between knowledge possessed and race (p–value=0.318). Indian students were observed to be more knowledge (Mean rank=10.99±2.35) compared to Malay students (Mean rank=8.50±2.12), Chinese students (Mean rank=10.49±2.64), and others (Mean rank=9). There is no significance difference between knowledge possessed and year of education of students in Kruskal–Wallis test (p–value=0.074). Third year of education of students were noted to have less knowledge (Mean rank=10.20±2.60) compared to fourth year of education of students (Mean rank=10.91±2.50) and fifth year of education of students (Mean rank=10.60±2.64). The result of Mann Whitney test shows significance difference between knowledge possessed and residence (p–value=0.004). Non–hostellers were having a better knowledge (Mean rank=11.16±2.80) compared to hostellers (Mean rank=10.36±2.42). There was no statistically significance observed between knowledge possessed and educational background (p–value=0.927). Diploma candidates were having a better knowledge (Mean rank=11.60±2.30) compared to A–level candidates (Mean rank=10.29±3.64), Foundation candidates (Mean rank=10.60±2.50) and STPM candidates (Mean rank=10.58±2.98) as shown in Table 3.

Table 2 Respondent's attitude and their demographics

Variables	N	Mean ±SD	p–value
Gender			
Male	85	35.98±4.30	0.332*
Female	183	36.70±4.20	
Faculty			
Medicine	83	36.37±4.60	0.039**
Pharmacy	100	36.98±4.82	
Dentistry	85	35.98±2.90	
Age Groups			
20–25 Years Old	262	36.56±4.11	0.709**
26–30 Years Old	5	32.00±8.31	
More than 30	1	36	
Race			
Malay	2	26.00±12.73	0.236**
Chinese	190	36.61±3.61	
Indian	75	36.37±5.10	
Others	1	40	
Year of Education			
3 Years	95	36.61±4.92	0.468**
4 Years	130	36.47±4.22	
5 Years	43	36.19±2.24	
Residence			
Hosteller	185	36.11±4.42	0.049*
Non–Hosteller	83	37.29±3.68	
Educational Background			
A–Level	7	37.00±1.41	0.567**
Diploma	5	35.80±4.60	
Foundation	230	36.60±4.26	
STPM	26	35.31±4.42	

*Mann Whitney, **Kruskal–Wallis

Table 3 Respondent's knowledge and perception and their demographics

Variables	N	Mean ±SD	p–value
Gender			
Male	85	10.95±2.60	0.080*
Female	183	10.45±2.54	
Faculty			
Medicine	83	10.70±2.80	0.038**
Pharmacy	100	10.19±2.39	
Dentistry	85	11.01±2.48	
Age groups			
20–25 Years Old	262	10.57±2.57	0.212**
26–30 Years Old	5	11.80±1.64	
More than 30	1	14	
Race			
Malay	2	8.50±2.12	0.318**
Chinese	190	10.49±2.64	
Indian	75	10.99±2.35	
Others	1	9	
Year of education			
3 years	95	10.20±2.60	0.074**
4 years	130	10.91±2.50	
5 years	43	10.60±2.64	
Residence			
Hosteller	185	10.36±2.42	0.004*
Non–Hosteller	83	11.16±2.80	
Educational background			
A–Level	7	10.29±3.64	0.927**
Diploma	5	11.60±2.30	
Foundation	230	10.60±2.50	
STPM	26	10.58±2.98	

*Mann Whitney, **Kruskal–Wallis

Discussion

AIMST University is an institution of medical, science and technology. The main medical courses are Medicine, Dentistry and Pharmacy. A study on their attitude, knowledge and perception regarding Amyotrophic Lateral Sclerosis (ALS) was carried out. There were seven demographic characteristics for the study which are faculty, year of education, age, gender, race, education background and residency of the students. There were 83 (31.0%) of respondents from Faculty of Medicine, 85 (31.7%) from Faculty of Dentistry and 100 (37.3%) from Faculty of Pharmacy. Compared with previous study, cross–sectional and random method was used to conduct the study. There was no specific demographic characteristics have been stated.[13] The study was done on Year 3, Year 4 and Year 5 students of the three faculties. There were 45 (47.4%) of Year 3 students and 38 (29.2%) of Year 4 students from Faculty of Medicine, whereas 42 (32.3%) of Year 4 students and 43 (100.0%) of Year 5 students from Faculty of Dentistry. Students from Faculty of Pharmacy had the highest participation which was 50 (52.6%) of Year 3 students and 50 (38.5%) of Year 4 students. In a nutshell, for all the three faculties, there were 95 Year 3 students, 130 Year 4 students and 43 Year 5 students.

Next, the age group was divided into three groups, 20–25 years old, 26–30 years old and more than 30 years old. There were 262 (97.8%) of respondents with age range from 20– 25 years old, 5 (1.9%) of respondents from age 26–30 years old and 1 (0.4%) of respondent with age more than 30 years old. Gender is also one of the important variables in the evaluation. There was 85 (31.7%) of males and 183 (68.3%) of female respondents were participated in the study. It showed domination of female students over male students. Another important variable is race. Malaysia is a multiracial country, thus there are three main races involved and option of others is also included. There were 2 (0.7%) of Malay students, 190 (70.9%) of Chinese students, 75 (28.0%) of Indian students and 1(0.4%) student of other races. Educational background is the students' previous or highest education level before they peruse their undergraduate programme. According to Malaysian education system some certificates can be able the students to continue their undergraduate programme such as A–level, Sijil Tinggi Pelajaran Malaysia (STPM), Diploma, Foundation in Science and others. The others might be they did their first degree or it might be their second degree. There were 7 (2.6%) of students with the education background of A–level, 26 (9.7%) of students from STPM, 5 (1.9%) of students from Diploma and 230 (85.8%) of students from Foundation in Science. Residency influences the amount of sources and exposure of the students regarding ALS disease. There were 185 (69.0%) of students who are hostellers and 83 (31.0%) of students who are non–hostellers. Medical students including Medicine, Dentistry and Pharmacy students are the targeted groups that assumed to have an adequate knowledge in current outbreaks of diseases. Most of the diseases that occur are due to uncontrollable transmission or no approved medication. Amyotrophic Lateral Sclerosis (ALS) is the disease with no approved medication and many are still on trial mode. This disease will continuously to occur until the cure is discovered and the group of healthcare workers who are going to deal with this disease will be mainly medical students who are still perusing their tertiary education now.

Knowledge of medicine students was evaluated based on questionnaires that tested on the information regarding Amyotrophic Lateral Sclerosis (ALS) such as causes, symptoms, epidemiology, prevention methods, risk factors and management. 83 medicine students were participated which including 45 (54.2%) of third year students and 38 (45.8%) of fourth year students. Among 45 third year students, 18 (56.2%) of them having adequate knowledge and 27 (42.9%) of them having inadequate knowledge. Overall 31 (34.8%) of medicine students have adequate knowledge compared to dentistry and pharmacy students. This shows that medicine students having the highest score in knowledge portion. By improving this scenario, students must be more aware about the outbreak diseases since they are the one who will diagnose the diseases in future. In addition, students must be exposed to current situation. This can be done by having group discussion, assignments and presentation by the students. The most effective way is by conducting problem–based learning. These will give opportunity for the students to experience case studies and they may tend to find more information and gain knowledge about ALS. 85 (31.7%) of dental students from both fourth and fifth year have been participated in this study. There were 42 (32.3%) of fourth year students and 43 (100.0%) of fifth year students. Fifth year students were having more adequate knowledge compared to fourth year students. Only 17 (38.6%) of fourth year students were having adequate knowledge regarding ALS disease. On the other hand, the fifth year students believed to have more adequate knowledge since 13 (100.0%) of them scored high in knowledge portion.

Results showed that they were updating themselves regarding diseases around the world especially recent outbreaks but yet the number of students with adequate knowledge is less satisfactory. The students that had been participated in this survey are on their clinical practice. They are practicing at AIMST Dental Clinic and handling patients every day. It is better for them to gain more knowledge about the disease. The highest number of students participated in this study was by pharmacy students, 100 (37.3%). There were 50 (52.6%) of third year students and 50 (38.5%) of fourth year students. There were14 (43.8%) of the third year students and 14 (31.8%) of fourth year students having adequate knowledge. Pharmacists are professional healthcare providers, thus they might be curious about the approved medication and gain knowledge about this disease. The medical students and the future healthcare workers should have adequate knowledge in order to diagnose and treat the disease correctly. Disease education was generally effective to improve the level of knowledge and attitude of medical students. Sustained health education tends to believed that it can influence new graduates to have higher knowledge and better attitude towards Amyotrophic Lateral Sclerosis (ALS) disease through university curriculum, health institution and mass media, hence enable them to make proper decisions about pro–creation later in life.[14] A very vital realization from this study is that education is important. More educational efforts should be exerted on the students themselves for the importance of ALS disease as students play an important role in dissemination of knowledge and raising awareness among their communities.[15]

Conclusion

Dentistry students are more knowledgeable about ALS disease compared to pharmacy and medicine students. This number is not satisfactory though because pharmacists are all–rounded profession. They might be curious about the approved medication and they gain knowledge about this disease as ALS was once occurred in Malaysia. The implication of this study is that more graduated students will be more familiar with this disease and hence to come up with different types of medications as well as patient compliance. The future

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healthcare will be improved as well if graduated students have this kind of adequate knowledge about Amyotrophic Lateral Sclerosis. There are certain limitations associated with the study. This study was conducted at a single center where the number of respondents was limited. So the results of current study cannot generalize.

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Conflict of interest

The author declares no conflict of interest.

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