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Does Neurophobia Exist Among Rehabilitation Sciences Students? A Survey At Universiti Kebangsaan Malaysia

(Adakah Neurofobia Wujud dalam Kalangan Pelajar Sains Rehabilitasi? Satu Kajian di Universiti Kebangsaan Malaysia)

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ABSTRACT

Neurophobia, defined as 'the fear of neural sciences and neurology' is reported among medical students, which threatened their performance in neurology course. This phenomenon has not been studied among rehabilitation sciences students despite the significance of neurology as an area for rehabilitation. In this study we aim to assess the perceptions of neurology course and the possibility of neurophobia existence among rehabilitation sciences students of Universiti Kebangsaan Malaysia (UKM). We also aimed to identify learning methods which are regarded as useful among the students. A survey using self-administered questionnaires was conducted among 73 students from School of Rehabilitation Sciences of the university. Questions in the questionnaire were adapted from previous studies, in which neurophobia was indicated by poor knowledge and low confidence level in managing neurology course. Results showed that the percentage of participants who perceived having good knowledge of neurology was significantly higher than the percentage who claimed of having poor knowledge level (90.4% versus 9.6%, $p < 0.01$). Similarly, the percentage of participants who claimed having high confidence to handle neurology cases was higher than the percentage who expressed lack of confidence (79.2% versus 20.8%, $p = 0.03$). However, neurology course was perceived as difficult by majority of the participants (78.1%) when compared to other courses. Majority of the participants (97.3%) perceived clinical teaching as a useful method of learning rehabilitation science courses including neurology followed by problem-based learning (90.4%). While limited exposure to neurology cases was claimed as the main reason to why neurology is difficult. In conclusion, although neurology is perceived as a difficult course among rehabilitation sciences students, the students did not report lack of knowledge and confidence in the course. This implies that neurophobia does not exist among UKM rehabilitation students. Enhancement of learning methods may assist in reducing the level of difficulty of neurology course among the students.

Keywords: Neurology; rehabilitation sciences; students

ABSTRAK

Neurofobia, didefinisi sebagai 'rasa takut terhadap neurosains dan neurologi' telah dilaporkan dalam kalangan pelajar perubatan, dan menggugat prestasi dalam kursus neurologi. Fenomena ini masih belum dikaji dalam kalangan pelajar sains rehabilitasi disebalik kepentingan rehabilitasi di bidang neurologi. Kajian ini bertujuan untuk menilai persepsi terhadap kursus neurologi dan kemungkinan wujudnya fenomena neurofobia dalam kalangan pelajar Sains Rehabilitasi Universiti Kebangsaan Malaysia (UKM). Kajian ini turut mengenal pasti kaedah pembelajaran yang dianggap berguna dalam kalangan pelajar. Kajian telah dijalankan ke atas 73 pelajar dengan menggunakan borang soal selidik. Soalan dalam borang kaji selidik telah diadaptasi dari kajian lepas; neurofobia dikenalpasti menerusi persepsi ilmu pengetahuan yang lemah dan tahap keyakinan yang rendah dalam kursus neurologi. Hasil kajian mendapati bahawa peratus peserta yang melaporkan tahap pengetahuan yang baik dalam neurologi lebih tinggi daripada peratus yang mempunyai tahap pengetahuan yang lemah (90.4% berbanding 9.6%, $p < 0.01$). Begitu juga dari aspek keyakinan, peratus peserta yang melaporkan tahap keyakinan yang tinggi adalah lebih tinggi daripada peratus yang melapurkan tahap keyakinan yang rendah (79.2% berbanding 20.8%, $p = 0.03$). Namun, majoriti peserta (78.1%) menganggap kursus ini sukar berbanding kursus lain. Majoriti peserta (97.3%) berpendapat latihan klinikal merupakan kaedah pembelajaran yang berguna bagi kursus sains rehabilitasi termasuklah kursus neurologi, diikuti 'problem-based learning' (90.4%). Manakala pendedahan yang terhad terhadap kes neurologi merupakan penyebab utama mengapa kursus ini menjadi sukar. Kesimpulannya, walaupun kursus neurologi dianggap sukar, pelajar tidak melapurkan kekurangan tahap pengetahuan dan keyakinan terhadap kursus ini. Ini menunjukkan bahawa neurofobia tidak wujud dalam kalangan pelajar sains rehabilitasi UKM. Penambahbaikan kaedah pembelajaran dapat membantu mengurangkan tahap kesukaran kursus neurologi dalam kalangan pelajar.

Kata kunci: Neurologi; sains rehabilitasi; pelajar

INTRODUCTION

Globally, the prevalence and public health impact of neurology diseases are rising due to the ageing of the world population. Neurology conditions now contribute approximately 6.3% to the global health burden, which places greater demand on healthcare services including rehabilitation (Menken et al. 2000).

Malaysia is experiencing similar scenario in regard to this patient population. Stroke, for example is a leading cause of adult disability and is among five leading causes of hospital death in Malaysia (Loo & Gan 2012). In a main teaching hospital in East Coast of Peninsular Malaysia, an average of 6,000 out-patient neurology cases are registered each year (Abdullah et al. 2006). Based on the National Trauma Database (2011), of a total of 166,768 trauma cases admitted to the emergency department of eight main government hospitals around Malaysia, 76.8% were road traffic accident cases, of which 85.4% were traumatic brain injury. Another significant neurology condition in the country is Parkinson disease, with the number of patients registered with the Malaysian Parkinson Disease Association (MPDA) alone recorded as nearly 400 (MPDA, www.mpda.org.my). The number of neurology cases is estimated to be much higher, with a high possibility of increasing each year due to the increase in ageing population in the country.

The increase in number of neurology cases in Malaysia indicates greater needs for neuro-rehabilitation services. Most neurology cases are complex, as such rehabilitation professionals need to be equipped with good knowledge, skills and confidence in dealing with the demand of care for the cases (Edwards et al. 2006; Bartolo et al. 2010). However, despite these needs, observation of rehabilitation science students' performance in neurology when compared to other core specialties at Universiti Kebangsaan Malaysia (UKM) found unfavourable level of clinical competency. Neurophobia, which refers to 'the fear of neural sciences and neurology' may be a reason for this (Flanagan et al. 2007). This phenomena, which is indicated by the lack of confidence and knowledge in neurology is evident among medical students and medical officers, and threatened their performance in managing neurology clients (Flanagan et al. 2007; Kam et al. 2013; Matthias et al. 2013; Schon et al. 2002; Zinchuk et al. 2010). A study in the United Kingdom reported that neurology was perceived by medical students as the most difficult sub-specialty course (Schon et al. 2002, Flanagan et al. 2007). There were reports among patients that non-specialist medical officers showed lack of confidence and were unwilling to manage neurological disease (Zinchuk et al. 2010). Several studies found that the level of confidence of medical officers in managing neurology cases is much lower than when handling other conditions (Flanagan et al. 2007; Kam et al. 2013; McGee et al. 2014; Schon et al. 2002; Zinchuk et al. 2010). In Singapore, 95% of medical students and medical officers showed least interest in neurology course when compared to other courses (Kam et al. 2013).

Neurophobia is regarded as a global issue with implications on patient care and satisfaction (McColgan et al. 2013; McGee et al. 2014). However, despite the importance of the role of rehabilitation professionals in managing neurology cases, no study has been published to date which look into the presence of neurophobia among the professionals. In this study, we evaluated the perceptions of neurology course and assessed the possibility of neurophobia existence among UKM rehabilitation sciences students. We also intended to identify learning methods which are regarded as useful among the students.

METHODS

STUDY DESIGN AND LOCATION

This was a survey which conducted at the School of Rehabilitation Sciences, Faculty of Health Sciences, UKM from January to June 2015. The study was approved by the Research Ethics Committee of UKM (NN-2015-004).

PARTICIPANTS

Recruited participants were students from year three and four, and recently graduated students from the Physiotherapy, Occupational Therapy and Speech Sciences programmes of the school. All participants had completed ten core courses including neuroscience course. The number of required participants for the survey was estimated based on the recommendation by Krejcie & Morgan (1972); 80 participants were required as representatives of the rehabilitation sciences students of the university.

DATA COLLECTION

Data was collected using a self-administered questionnaire which was distributed online. The questionnaire was adapted from previous studies of neurophobia among medical students, in which neurophobia was indicated by poor knowledge and low confidence level in managing neurology course (Flanagan et al. 2007; Zinchuk et al. 2010) and consisted of three sections; 1) the level of knowledge, level of confidence and perception of difficult/not difficult for 10 core rehabilitation courses, 2) The reasons for why neurology was perceived as difficult and usefulness of various methods in learning neurology course, 3) strategies to improve the learning of neurology. Items in section one were scored based on a six-level Likert scale. For section two, the participants were required to choose the most important reason and to indicate usefulness of several learning methods. While section 3 requires the participants to choose strategies which they think would assist in improving the learning of neurology course.

Questions in the questionnaire were pilot-tested on seven physiotherapy students for clarity prior to conducting the survey. The questionnaire requires only five to 10 minutes to be completed.

DATA ANALYSIS

Data were analysed using statistical package for social sciences (IBM-SPSS) version 20.0. Descriptive analysis was used on demography data, while categorical data were analysed using Chi Square test. Responses for the six-level Likert scale were simplified into two categories namely good and poor for knowledge level, high and low for confidence level and difficult and not difficult for perceived difficulty level.

RESULTS

Eighty participants were approached and given access to the questionnaire, however only 73 questionnaires were returned which representing a 91.3% response rate. A total of 47.9% of them were physiotherapy students while 28.2% and 23.3% were students from Speech Sciences and Occupational Therapy programs respectively. The characteristics of the participants are presented in Table 1.

TABLE 1. Characteristics of the participants

Variables	n (%)
Gender	
Male	10 (13.7%)
Female	63 (86.3%)
Ethnicity	
Malay	37 (50.7%)
Chinese	35 (47.9%)
Indian	1 (1.4%)
Program	
Physiotherapy	35 (47.9%)
Occupational Therapy	17 (23.3%)
Speech Sciences	21 (28.2%)
Year of study	
Year 3 and 4	51 (69.8%)
Recently graduated	22 (30.2%)
Neurology cases managed (per year)	
0	3 (4.1%)
1-10	22 (30.1%)
11-30	26 (35.6%)
31-100	21 (28.8%)
>100	1 (1.4%)

Figure 1 and Table 2 shows perceived level of knowledge, confidence and difficulty for ten rehabilitation sciences courses among the participants. Intensive Care

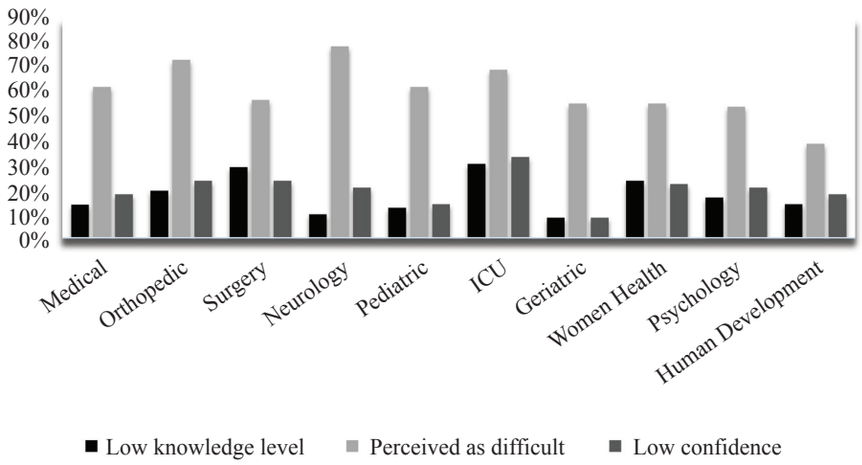

FIGURE 1. Percentages of low knowledge, perception as 'difficult' and low confidence level for 10 core rehabilitation sciences courses

ranks first as the course in which a significant percentage (> 30%) of participants perceive as having low knowledge and confidence level. For neurology, the percentage of participants who perceived having good knowledge of neurology was significantly higher than the percentage who claimed of having poor knowledge level ($p < 0.01$). Similarly, the percentage of participants who claimed having high confidence to handle neurology cases was higher than the percentage who expressed lack of confidence ($p = 0.03$). However, neurology was perceived as a difficult course by majority of the participants (78.1%) compared to other course.

The main reason for why neurology was perceived as difficult is presented in Figure 2. Limited exposure to neurology cases (20%), difficult neuro-anatomy (19%) and complexity of neurology cases (16%) were three main reasons for why the course was regarded as difficult.

Figure 3 presents the most usefulness method of learning neurology among the participants. Clinical teaching (97.3%), problem-based learning (90.4%) and

TABLE 2. Perception of the participants with regard to level of knowledge, confidence and difficulty for 10 rehabilitation sciences core courses

Course	Knowledge level (%)			Confidence level (%)			Difficulty level (%)		
	Poor	Good	p	Low	High	p	Difficult	Not Difficult	p
Medical	14.1	85.9	0.00	20.6	79.4	0.03	63.4	36.6	0.24
Orthopedic	20.6	79.4	0.04	25.0	75.0	0.06	76.8	23.2	0.00
Surgery	31.3	68.7	0.46	25.0	75.0	0.06	60.3	39.7	0.09
Neurology	9.6	90.4	0.00	20.8	79.2	0.03	78.1	21.9	0.00
Pediatric	12.3	87.7	0.00	13.7	86.3	0.00	61.6	38.4	0.05
ICU	32.8	67.2	0.09	32.9	67.1	0.29	73.5	26.5	0.00
Geriatric	8.2	91.8	0.00	8.2	91.8	0.00	54.8	45.2	0.41
Women Health	25.4	74.6	0.08	24.4	75.8	0.04	58.8	41.2	0.15
Psychology	32.4	67.6	0.05	23.8	76.2	0.04	57.4	42.6	0.23
Human Development	17.2	82.8	0.03	22.8	77.2	0.03	48.3	51.7	0.79

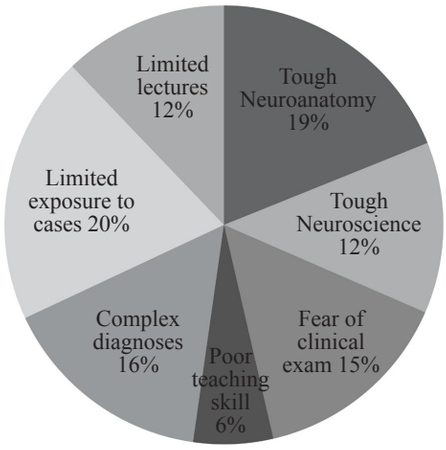

FIGURE 2. Reasons for why neurology was perceived as difficult

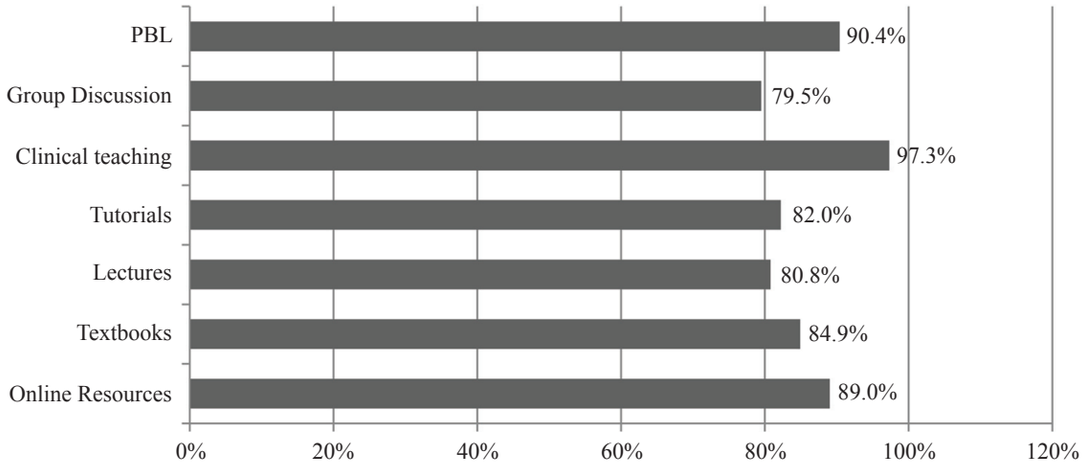

FIGURE 3. Usefulness of methods of learning neurology

online resources (89.0%) were three most useful methods of learning neurology as perceived by the participants.

Proposed strategies to improve the learning of neurology are shown in Figure 4. All participants agreed that more exposure to neurological cases is required to improve the learning of neurology among students. A total of 95.2% of the participants suggested more bedside teaching by lecturer as another important method to improve learning. Other mostly suggested methods are the provision of reliable online resources (88.7%) and delivery of innovative lectures (82.3%).

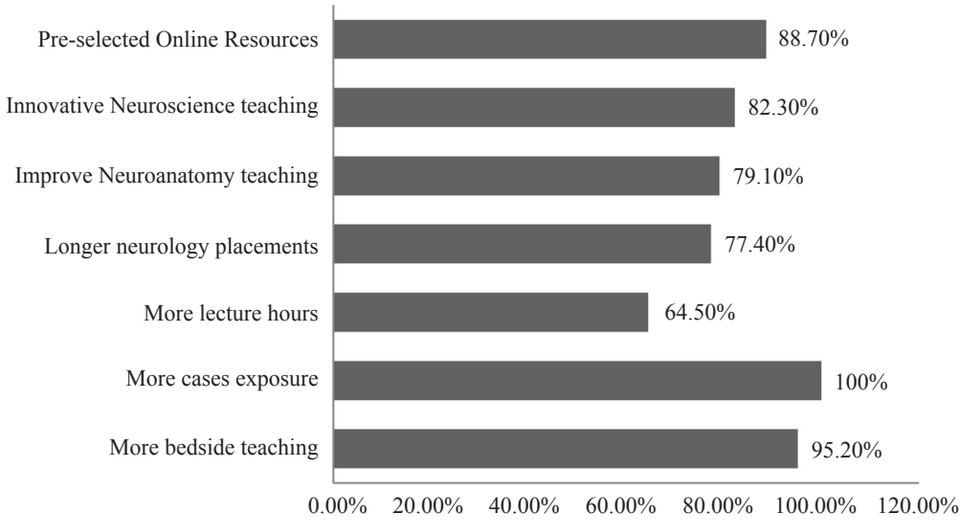

FIGURE 4. Strategies to improve the learning of neurology

DISCUSSION

The main aim of our study was to evaluate the perceptions of neurology course and to assess the possibility of neurophobia existence among UKM rehabilitation sciences students. Studies in the past have reported perception of low knowledge, confidence level as well as interest in managing neurology course and cases among medical students (Flanagan et al. 2007; Sanya et al. 2010; Schon et al. 2002; Zinchuk et al. 2010). Our study found contradictory results with majority of the students claimed of having good knowledge and confidence level, which ruled out the presence of neurophobia among the students. This result could be due to the limited exposure to neurology cases which experienced by majority of students in our study; reported as 30 cases or less at the survey time. Because neurology cases are commonly complex and challenging to manage (Bartolo et al. 2010), the limited exposure to the cases could have limited the opportunity for students to be challenged in term of knowledge and skills, as well as confidence level. More opportunities to handle neurology cases and sufficient practice duration are needed before the students can adequately reflect on their ability.

Our study showed that neurology course was perceived as difficult by majority of students from the rehabilitation sciences school at UKM. This finding is consistent with the result from previous studies among medical students, practitioners and medical specialists (Kam et al. 2013; Matthias et al. 2013; Schon et al. 2002; Youssef 2009). Limited exposure to neurology cases despite having completed neurology placements was perceived by majority of the students as the main reason to why neurology is difficult. This illustrates the limited opportunity to apply knowledge and skills gained in the classroom into real clinical environment, which is important in developing students' competency (Hudson 2006). Our finding is in agreement with the findings of studies among medical students in other countries by Fantaneanu and colleagues (2014), McCarron and colleagues (2014) and Zinchuk and co-researchers (2010) which stressed on the needs for adequate clinical exposure.

Clinical teaching was perceived by majority of the students in our study as a helpful method in learning neurology, followed by problem-based learning and online resources. This findings are consistent with findings of the study by McCarron and colleagues (2010) and support the importance of case discussion in building the students' clinical reasoning and critical thinking skills which are necessary in their journey to be future healthcare professionals (Brown et al. 2011; Rodger et al. 2008). Guided discussion in group is also seen as a way to create a positive learning environment and minimise anxiety among students during clinical sessions (Gould et al. 2008).

Our study also explored the perceived strategies to improve learning of neurology course among the students. All the students agreed that more clinical exposure is required to enable optimum learning in neurology. Innovative teaching by lecturers is also stressed as a way to improve learning. This is consistent with results of previous studies, in which learning through visualisation

such as 3 dimensional (3D) images and usage of various teaching aids were found to produce greater and longer positive effects on learning of neurology among medical students (Estevez et al. 2010; Matthias et al. 2013; Sanya et al. 2010; Youssef 2009).

Our study is subjected to two main limitations. Firstly, the use of recall in completing the questionnaire may have threatened the accuracy of the reporting among majority of the students. Secondly, although our study could demonstrate the perceived level of knowledge, confidence and difficulty level of neurology course among the students, we did not seek to associate these perceptions with the students' actual performance of the course. Further study is therefore warranted in this topic area.

CONCLUSION

We conclude that although neurology is perceived as a difficult course among rehabilitation sciences students, the students did not report lack of knowledge and confidence which indicate the presence of neurophobia. Improvement of learning methods using strategies as recommended by the students may assist in reducing the level of difficulty of neurology course.

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