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Editorial Board:

EDITORIAL

ASEAN Journal of Psychiatry Needs To Be Indexed

Since 1981, the ASEAN Federation of Psychiatry and Mental Health had inspired ASEAN Journal of Psychiatry. After more than 18 years founded, ASEAN Journal of Psychiatry is probably the oldest regional journal in the Asian continent. I think now is the right time to index the publication of the journal as a permanent online publication to facilitate accessibility and ongoing continuity, especially in this region.   .

The objective of ASEAN Journal of Psychiatry that was founded in 1991 is to disseminate current and contemporary knowledge in the field of mental health and psychiatry, especially in this region that is rich with cultural diversity, to the international scientific community.

For a journal to be indexed, it has to be brought to the Committee for review. There will be few domains of the journal that have to be considered before it is indexed. These domains cover the quality of content, quality of editorial work, production quality and audience. For the quality of content, ASEAN Journal of Psychiatry has achieved the criteria for validity, importance, originality, and contribution to the coverage of the field on the overall contents from the ASEAN region primarily. For the quality of editorial work, the journal has demonstrated features that contribute to the objectivity, credibility, and quality of its contents. So far we are selecting articles from various ASEAN countries as well as from other parts of the world. Malaysia, Singapore and Thailand has regularly contributed to the Journal for the past 3 years. We have managed to publish the Journal regularly ie. 2 issues annually for the past 4 years and hope that it will continue on its production quality and regularity. Since it is free for access (www.aseanjournalofpsychiatry.org), researchers, practitioners, educators, administrators, and students, especially in the area of mental health can benefit from the journal website. To date, we have substantial publication in the areas of : reports of original research, case reports with discussion and descriptions of evaluation of methods or procedures.

ASEAN Journal of Psychiatry is a research journal devoted to reporting original investigations in the biomedical and mental health sciences, including research in the basic sciences, effectiveness of diagnostic or therapeutic techniques and studies relating to the behavioral, epidemiological, or educational aspects of medicine. For the editorial board, we wish to have the Journal being reviewed for possible indexing in MEDLINE (MEDLINE Review Application Form" at http://wwwcf.nlm.nih.gov/lstrc/lstrcform/med/index.html.).

We do hope the next editor from Singapore (2011 – 2012) will work towards this direction, that is to index this "old" Journal for its scientific merit to be recognized internationally. It is my hope that the rotation of the editorship biennially would not delay this good trend of zest.

Hatta Sidi
Chief Editor.
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LETTER TO EDITOR

RESEARCH, CASUISTRY AND PSYCHIATRY – AN ASIAN PERSPECTIVE

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Dear Sir- in a recent article published in your journal, Volume 10 (1): Jan-June 2009, Vaingankar et. al, (2009) reported an elegant article on 'Psychiatric research and ethics: Attitudes of mental healthcare professionals in Singapore' [1]. We would like to respond to the article by sharing our thoughts and experience on intention, autonomy, casuistry and psychiatric research from an Asian perspective. Over the last decade research in Asia has increased dramatically. This is mainly due to awareness regarding great research potential and also pharmaceutical interests in Asian population [2]. The increasing number of trials have generated a need to ensure that participants in clinical trials were protected and that data reported were valid [3]. Thus adhering to standard international guideline such as Good Clinical Practice (GCP) served this purpose [4, 5]. Conducting research involving patients with psychological problems can be controversial if GCP principles are not adhered to strictly. Many questions arise with regards to proper informed consent, protocol violation and post-research follow-up care. Another influential factor for research in psychiatry in Asia is the rich multi-cultural population that has varying attitudes and beliefs towards psychological problems and the treatment options [6-8]. Culture bound syndromes, often treated holistically by the traditional healer may lose this option where clinical trials readily offer a purely reductionistic pharmacological form of treatment for conditions involving the mind and not only the brain, and that may require not just medication.

The conduct of clinical research in accordance with the principles of GCP helps to ensure that clinical research participants are not exposed to undue risk, and that data generated from the research are valid and accurate. Thus the GCP not only serves the interest of clinicians and those involved in the research process, but also protects the rights, safety and well-being of subjects and ensuring that investigations are scientifically sound and advance public health goals. Beneficence and autonomy is of utmost importance although at times it may be difficult to draw a clear boundary between right and wrong and what is ethical and not. This is where adequate ethical scrutiny and frequent auditing by neutral bodies is vital. Justifiable cause and motives for research

should be unquestionable. Early termination of patients in research when required must be strictly adhered to and accountability by the pharmaceutical company, the institute involved and the individual researcher be emphasized.

In the Asian setting, autonomy and the individual rights may carry a different meaning [6-8]. The extended family still play a major role in the health care decisions, especially when it involves mental health. Despite the fact that family members often take on the responsibility of forceful treatment of an acutely ill patient without the use of sectioning or certification, enrolling a psychiatric patient in research is approached from totally different view. Families are often lost for better options and tend to consent to participate in research hastily. The ethical committees in most Asian countries stress on the importance of a patient being totally aware of the protocols involved and the short and long-term outcomes. When the research projects involve more than one institute, all ethical committees involved are required to clear the research project independently [9]. However the aspect of offering a patient pharmacological treatment options without adequately addressing issues of psychotherapy or cultural/traditional interventions may at times deprive patients of complementary and beneficial forms of non-pharmacological treatment. In most Asian countries, currently being flooded by pharmaceutical research interests, there is a question of neglect. Is the vital area of treatment, the traditional religio-magical realm of mental health being bypassed? Asia has a rich history and depth of traditional health services. Are we overlooking this great potential by focussing only on the pharmacological aspects of psychiatry?

The issue of casuistry in GCP training may also be inadequately addressed. The unconscious motives that drive a researcher, casuistry is defined as a specific method of applying ethics that relies on the rationalization and analysis of individual cases, succumbing to specious, deceptive, over-subtle and often unconscious forms of reasoning [10]. Recent interest in casuistry has been sparked with the phenomenal growth of psychiatric research in Asia. Is the acceptability of research in Psychiatry being clouded by the lack of effective medications available, the rapidly growing need, the financial "carrots" or the lack of more stringent ethical guidelines? Structured GCP training for research in Psychiatry may not be enough as unconscious and conscious rationalization of facts may lead to short and long term detrimental effects. A famous author, William Provine once said that no moral or ethical laws, nor were there absolute guiding principles for human society [11]. Similarly, a prominent American philosopher Margolis said that moral principle did not exist. There were also no laws of nature or rules of thought. He concluded that whatever we offer in the way of principles or laws or rules are artifactual posits formed within a changing set of principles, an instrument of effective ideology [12]. Is the Asian population being lead into a realm of artifactual posits in the name of research that may have long term detrimental effects on the time tested bio-psycho-social approach of mental health care practised here for thousands of years?

Philosophers have had the never ending debate on morality as compared to supernaturalistic ethic [13-15]. Based in cultural beliefs, Fletcher wrote in great depth on what he defined as " Situation Ethic", what he also called "neocasuistry" [14]. Controversy never ceased in this are and newer terms such as existential ethics,

consequentiallism, ethical relativism and moral nihilism came to the forefront [13]. The entire ethical scheme has come under close scrutiny and is Asia taking his lightly? Secular humanism may be inadvertently replacing traditional and cultural values of the Asian society. As the need for pharmacological development in psychiatry grows with great alacrity, we as responsible contributors to this science must not lose our bearings of the holistic needs of mental healthcare, especially in Asia.

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ORIGINAL ARTICLE

KNOWLEDGE, ATTITUDE AND PRACTICE (KAP) TOWARDS SLEEP AMONG MEDICAL STUDENTS OF INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA (IIUM)

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Abstract

Objective: **To determine the knowledge, attitude and practice (KAP) of sleep among medical students of IIUM towards and to determine the impact of socio-demographic data on the knowledge, attitude and practice.** *Methods:* **A cross-sectional study was carried out among 106 students from first, second and third year medical students of IIUM. Verbal consent was taken from the students who were willing to take part in this study. Student knowledge about sleep was studied using a questionnaire.** *Results:* **A total of 106 medical students completed the survey, there were 54 female and 52 male. The mean age of the students was 20 ± 0.56 and ranged from 18 to 22 years. In terms of their sleep knowledge, the mean ± SD knowledge, attitude and practice scores were 81.8 ± 16.8, 65.9 ±15.3 and 176 ± 26.3 respectively. In univariate analysis, there was a significant difference between parents' marital status regarding knowledge of the students (p = 0.03). There was a significant difference between gender regarding attitude of the students (p=0.05). In multivariate analysis, gender and smoking status were significantly affected the overall KAP.** *Conclusion:* **This study showed that sleep medicine knowledge was generally low among medical students. Therefore, educational strategies to improve knowledge regarding sleep-related problems and the development of proper sleep practices among medical students are needed.** *ASEAN Journal of Psychiatry, Vol.11 (1): Jan – June 2010: 6-12.*

Keywords: **Knowledge, Attitude, Practice, Sleep among medical students**

Introduction

Sleep is an active, cyclic biological phenomenon necessary for survival [1]. Sleep and lack of sleep are common human behaviours and experiences. Sleep disorders though highly prevalent are rarely diagnosed. Disturbed sleep is a common complaint and in the United States it has been estimated to affect up to 70 million Americans [2]. Sleep problems are seen across a wide age spectrum from children to the elderly. Sleep disorders can involve a number of specialties in their management such as respiratory medicine, neurology, psychiatry and otolaryngology [3]. The prevalence of particular kinds of sleep problems may vary with age, lifestyle, shift work, co-morbid state [4]. Sleep disorders are associated with many diseases such as sleep-disordered breathing, encompasses various clinical disorders, including congenital central hypoventilation syndrome (CCHS), apnoea of infancy, sudden infant death syndrome (SIDS), obstructive sleep apnoea syndrome (OSAS), sleep-related worsening of chronic pulmonary disease, obesity-related breathing abnormalities during sleep, and many others [5,6].

This is the first study in Malaysia undertaken to determine the KAP of sleep among medical students in Malaysia and to determine the impact of socio-demographic factors on the KAP of sleep.

Methods

A cross sectional study was carried out among first, second and third year medical students IIUM. Students were explained objectives of the study and invited to participate. Verbal consent to participate was obtained. Student responses were obtained using a questionnaire. Demographic details like gender, race, parents' marital status and residence were noted. Student knowledge about sleep was studied using a questionnaire originally developed by Sivagnanam et al (2004) [7]. The knowledge was involved 12 items and attitude had 13 items about sleep studied using a set of 25 statements. The practice of sleep was investigated using a separate set of 6 questions originally developed by (Shankar, 2008) [8].

The instrument focused on a limited set of questions pertaining to knowledge and attitude covering certain, important basic aspects of sleep physiology, pharmacology, sleep requirements, use and toxicity of hypnotics, consequences of sleep deprivation, sleep-hygiene misconceptions, and sleep practices of respondents. The responses were close-ended with 3 possibilities: "yes," "no," or "don't know." Sleep problems of respondents during the week preceding the study were noted for the Practice component. Scoring was done by awarding marks (correct response = 10, wrong = 1, don't know = 2, and not reported = 0) for each item of Knowledge and attitude. The response for items concerning practice was a frequency-based rating scale (with options, such as "not at all" = 40, "on 6-7 days" = 10, with equal gradation in-between and not reported = 0). Theoretically, maximum scores for Knowledge, attitude and Practice were 120, 130, and 240 marks, respectively, with a maximum grand total of 490. The data was analysed using t-test for univariate analysis

and multiple linear regression for multivariate analysis using SPSS version 13.0.

Results

A total of 106 medical students participated in this study. Fifty four (50.9%) were female and 52 (49.1%) were male. The mean age of the students was 20 ± 0.56 and ranged from 18 to 22 years, whereby 97 (91.5%) were Malay and 8 (7.5%) were non-Malay. The majority of the participants 103 (97.2%) reported that their parents are still married,

and two (1.9%) reported that their parent are divorced. The majority of the participants 69 (62.7%) stated that their residence was in town while 29 (26.4%) in the village. The majority of the participants are not smokers 101 (91.8%), while 5(4.5%) are smokers (Table 1). The scores were calculated according to method of Sivagnanam et al (2004)[7]. The mean $\pm$ SD knowledge scores was 81.8 ± 16.8, the mean $\pm$ SD attitude scores was 65.9 ± 15.3 and the mean $\pm$ SD practice score was 176 ± 26.3.

Table 1: Socio-demographic characteristics of respondents

Variable	Number (percentage %)
Gender	
Male	52 (49.1%)
Female	54 (50.9%)
Age	
< 20	12 (11.3%)
≥ 20	94 (88.7%)
Race	
Malay	97 (91.5%)
Non-Malay	8 (7.5%)
Parental marital status	
Married	103 (97.2%)
Divorced	2 (1.9%)
Place of family residence	
Town	69 (65.1%)
Village	29 (27.4%)
Smoking	
Yes	5 (4.7%)
No	101 (95.3%)

Regarding knowledge, parents' marital status is the only variable to have an impact on the knowledge of the students using t-test (p = 0.03). Females had higher mean score of knowledge than male, but the difference

is not statistically significant. Age, race, place of residence and smoking did not show any significant differences in terms of knowledge (Table 2).

Table 2: Knowledge and Socio-demographic

Variable	Mean ± SD	*p* value
Gender		
Male	79.3 ± 18.5	0.16
Female	84.0 ± 15.1	
Age		
< 20	81.7 ± 22.0	0.98
≥ 20	81.8 ± 16.2	
Race		
Malay	81.5 ± 17.1	0.69
Non-Malay	84.0 ± 15.2	
Parental marital status		
Married	81.4 ± 16.7	0.03
Divorced	106.5 ± 6.3	
Place of family residence		
Town	82.7 ± 16.3	0.38
Village	79.3 ± 19.2	
Smoking		
Yes	84.0 ± 25.4	0.79
No	81.7 ± 16.6	

Regarding attitude, gender is the only variable that has an impact on the attitude of the students using t-test (p = 0.05). Age, race, parents' marital status, place of residence and smoking did not show any significant differences (Table 3).

Table 3: Attitude and socio-demographic

Variable	Mean ± SD	*p* value
Gender		
Male	62.9 ± 16.8	0.05
Female	68.7 ± 13.3	
Age		0.23
< 20	60.9 ± 13.6	
≥ 20	66.5 ± 15.5	
Race		
Malay	65.6 ± 15.6	0.62
Non - Malay	68.5 ± 13.9	
Parental marital status		
Married	65.9 ± 15.5	0.89
Divorced	67.5 ± 10.6	
Place of family residence		
Town	65.2 ± 15.1	0.63
Village	66.8 ± 16.2	
Smoking		
Yes	67.0 ± 23.3	0.88
No	65.8 ± 15.1	

Regarding practice, there were no significant differences in scores among different groups using t-test. (Table 4). Gender, age, race, parents' marital status, place of residence and smoking did not show any significant differences.

Table 4: Practice and socio-demographic factors

Variable	Mean ± SD	*p* value
Gender		
Male	178.4 ± 31.5	0.42
Female	174.2 ± 20.4	
Age		
< 20	179.1 ±17.8	0.96
≥ 20	175.9 ± 27.3	
Race		
Malay	176 ± 26.6	0.48
Non-Malay	170 ± 26.1	
Parental marital status		
Married	175.8 ± 26.5	0.82
Divorced	180.0 ± 14.1	
Place of family residence		
Town	174.9 ± 25.2	0.32
Village	180.7 ± 28.2	
Smoking		
Yes	194.0 ± 32.8	0.12
No	175.4 ± 25.9	

Multivariate analysis using the multiple linear regression test showed that gender of the students was significantly associated with overall knowledge, attitude and practice towards sleep. Female had an average of 15.7 points higher than males (p = 0.05). Interestingly, smoking status of the students significantly associated with overall knowledge, attitude and practice towards sleep. Non smokers had an average of 44.8 point higher than smokers (p = 0.04). This means that smoker had higher scores than non-smokers (Table 5).

Table 5: Model building for overall (KAP)

Variable	B	SE	Beta	*p* value
Constant	317			
Parent marital status	40.8	26.1	0.16	0.12
Reference (Male)	Ref	Ref	Ref	
Female	15.7	7.98	0.21	0.05
Reference (smokers)	Ref	Ref	Ref	Ref
Non smokers	- 44.8	21.6	0.22	0.04

F value = 2.73, p = 0.04, R^2 = 0.089.; KAP = Knowledge, Attitude and Practice

Discussion

The results of our study confirmed that sleep medicine knowledge was generally low among medical students. Similar finding were reported by Mahendran et al (2004)[3] that knowledge among medical students was low. In Univariate analysis, there was a significant difference between parents' marital status regarding knowledge of the

students (p = 0.03). Those students with divorced parents had statistically significant higher level of knowledge but this could be just an accidental finding as there is no scientific explanation on this aspect. However for attitude toward sleep, gender factor was significant in which females have significantly higher level of attitude or in other words, female students have better attitude toward sleep as compared to their male counterparts.

In multivariate analysis, gender and smoking status significantly affected the overall knowledge, attitude and practice (KAP) of sleep among medial students. A previous study showed no significant gender differences regarding KAP of sleep among medical students [4]. There are a few limitations that we can draw from this cross sectional study. Firstly the sample size of the subjects participated in this study is relatively small. Furthermore the conclusion drawn from this study could not be generalized to medical students in other centres. Another limitation is the students who participated in this study were mainly in year one and two, with a small portion from year three. The low knowledge about sleep may be due to lack of exposure in the teaching curriculum as in most universities the exposure on sleep is mainly during psychiatric posting in year 4 or 5.

Recommendations

Educational strategy to improve knowledge regarding sleep related problems and to develop proper sleep practices among medical students is needed. Another suggestion is that the future studies may look at the level of knowledge among final year medical students who have better understanding about the issue.

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ORIGINAL ARTICLE

THE DEVELOPMENT AND VALIDITY OF THE MEDICAL STUDENT STRESSOR QUESTIONNAIRE (MSSQ)

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Abstract

Objective: **To determine the construct validity and the internal consistency of the Medical Student Stressor Questionnaire (MSSQ) among medical students hence in the future it could be used as a valid and reliable instrument to identify stressors among medical students.** *Methods:* **The blueprint for the development of MSSQ was developed after a review of literature on the subject and a discussion with experts in the field. It comprised of 40 items with six hypothetical groups. The face validity of the questionnaire was established through discussion with 141 final year medical students whereas content validity was established through discussion with experts from field of Medical Education and Psychiatry. It was administered to a total of 761 medical students. Data was analysed using Statistical Package Social Sciences (SPSS) version 12. Factor analysis was applied to test construct validity of the MSSQ. Reliability analysis (Cronbach's alpha and item total correlation) was applied to test internal consistency of the MSSQ.** *Results:* **The total Cronbach's alpha value of the MSSQ was 0.95. All the preliminary 40 items were included in the MSSQ as the items had item total correlation value of more than 0.3. The items were loaded nicely into the six pre-determined hypothetical groups as their factor loading values were more than 0.3.** *Conclusion:* **This study showed that MSSQ had good psychometric value. It is a valid and reliable instrument in identifying stressors among medical students.** *ASEAN Journal of Psychiatry, Vol.11 (1): Jan – June 2010: 13-24.*

Keywords: **Validity, reliability, medical students, stressors, factor analysis.**

Introduction

Tertiary education environment has always been regarded as a stressful environment to students. Medical training further adds to the problem. The associated negative consequences of chronic exposure to excessive stress to the mental and physical health of medical students have been described in many studies [1-10]. Some studies have described and revealed the sources of stress among medical students [3,

7, 8], however, none of them described the validity and reliability of the questionnaires used in identifying stressors of medical students. This article described a newly developed questionnaire, known as Medical Student Stressor Questionnaire (MSSQ), to identify sources of stress in medical students. It described the validity and reliability of the MSSQ in identifying medical students' stressors.

Stress in medical students

Stress is defined as the body's nonspecific response or reaction to demands made on it, or to disturbing events in the environment [11, 12]. It is not just a stimulus or a response but it is a process by which we perceive and cope with environmental threats and challenges [13]. Personal and environmental events that cause stress are known as stressors [14]. In short, stress is emotional disturbance or change caused by stressors. Some stress in medical school training is needed for learning [15]. Stress which can promote and facilitate learning is called 'favourable stress' and stress which can inhibit and suppress learning is called 'unfavourable stress'[15]. The same stressors may be perceived differently by different medical students, depending on their cultural background, personal traits, experience and coping skills.

One model that is useful in understanding stress among students is the person-environment model. This model argued that stress consists of three processes. Primary appraisal, the first process, is the process of perceiving a threat or challenge to oneself. Secondary appraisal is the process of bringing to mind a potential response to the threat or challenge. Coping, the last process is the process of executing that response. These processes are not static but constantly change as a result of the continual interplay between the person and the environment [14]. According to one elaboration of this model, stressful events are appraised by an individual as 'challenging' or 'threatening'. When students appraise their education as a challenge, stress can bring them a sense of competence and an increased capacity to learn. When education is seen as a threat, however, stress can elicit feelings of helplessness and a foreboding sense of loss. A critical issue concerning stress among students is its effect on learning. Individuals under low stress learn least and that those under moderate stress learn most. However, excessive stress is harmful to students' performance and achievement. Mechanisms that explain why students perform badly under stress include 'hypervigilance' (excessive alertness to a stressful situation resulting in panic – for example over studying for an exam) and 'premature closure' (quickly choosing a solution to end a stressful situation – for example, rushing through an exam) [16].

Studies have revealed high prevalence of stress in medical students, ranging from 30% to 50% [1, 3, 5, 9, 10, 17]. Its pattern depends on many factors and there seem to be some predictors of stress such as year of study [4]. Studies have revealed an association of unfavourable stress level with lowered medical students' self-esteem [15,18], anxiety and depression [19, 20], difficulties in solving interpersonal conflicts [21], sleeping disorders [22], increased alcohol and drug consumption [23-25],

cynicism, decreased attention, reduced concentration and academic dishonesty [7]. Unfavourable stress was also associated with inhibition of students' academic achievement and personal growth development [15]. As a result, medical students may feel inadequate and unsatisfied with their career as a medical practitioner in the future [8]. Therefore many researchers have stated the importance of early diagnosis as well as effective psychological services, which can prevent possible future illnesses among medical students [1, 9, 3].

Stressors of medical students

A stressor is defined as a personal or environmental event that causes stress [14]. Stressors of medical students generally were grouped into six categories; academic related stressors (ARS), intrapersonal and interpersonal related stressors (IRS), teaching and learning-related stressors (TLRS), social related stressors (SRS), drive

and desire related stressors (DRS), and group activities related stressors (GARS). Studies have revealed that the stressors affecting medical students wellbeing seems to be related to the medical training [1, 5, 8, 26, 27]. Curriculum differences in medical schools may not necessarily cause differences in the overall pattern of stressors (i.e. most of the top stressors are related to academic matters), although frequency (rank) of some stressors may be significantly different [26, 27].

Academic related stressors (ARS)

A study reported that top stressors were tests and examinations, time pressure and getting

behind in work as well as conflicting demands, not getting work done within time planned and heavy workload [26]. Another study reported that students who are perfectionists (high self-expectations) are at greater risk for psychological distress [28]. It is perhaps due to high self-expectation to do well in examinations [8]. All of these stressors were related to the academic matter [1, 5, 8, 26, 27].

Intrapersonal and interpersonal related stressors (IRS)

Intrapersonal conflict, interpersonal interaction and relationship were reported as stressors for medical students, such as poor motivation to learn, conflict with other students, teachers and personnel [1, 8, 26, 27]. These stressors were basically related to intrapersonal and interpersonal relationship matters.

Teaching and learning related stressors (TLRS)

Dissatisfaction with quality of education, with lectures, with guidance and feedback from teachers, and with recognition of work done as well as uncertainty of what is expected from the students were also perceived as stressors [1, 3, 8, 26]. All of these stressors were generally related to the teaching and learning process.

Social related stressors (SRS)

Aktekin et al. (2001) [1] reported that the level of dissatisfaction in social activities was associated with psychological distress among medical students. Sherina et al.(2003) [9] reported that there was significant relationship between emotional

disorder and medical students' relationship with their family and friends. A study reported that facing illness or death of patients and unable to provide appropriate answer to patients were sources of stress for medical students [8, 29]. Dissatisfaction with social activities was associated with emotional disorder [1, 9]. These stressors were generally related to the social relationship between the students with other people such as family and patients.

Drive and desire related stressors (DRS)

Political and family pressures as well as fear of wrong career choice and unwilling to study medicine were recognized as stressors in medical students [1, 26]. All the stressors were related to the motivation of the students to learn medicine.

Group activities related stressors (GARS)

The group learning environment, including tutor performance, and interactions with peers and patients caused little stress [29]. Feeling of need to do well (imposed by others) in learning activities was also reported as one of the stressors [8, 26]. These stressors were related to the group activities during their study.

Methods

Development of the MSSQ

The items were framed by referring to the authors cited in the forgoing pages, few statements through review of literature on the subject and also by discussion with experts in the field. These sources have provided the blueprint for the development of the MSSQ. Before constructing the tool,

theoretical constructs were formed consisting of the hypothetical groups. In the MSSQ, there were six hypothetical groups; Academic Related Stressors (ARS), Intrapersonal and Interpersonal Related Stressors (IRS), Teaching and Learning Related Stressors (TLRS), Social Related Stressors (SRS), Drive and Desire Related Stressors (DRS), and Group Activities Related Stressors (GARS). An item conveying the idea most clearly was retained, and the language of the item was made simple and suitable to express the concept implied. This process of scrutiny and evaluation yielded 40 statements for the MSSQ. The theoretical constructs of the MSSQ were shown in the table 1.

Expert evaluation of the items

In order to establish the content validity of the MSSQ, the items were subjected to Jury technique. The experts were drawn from the field of Medical Education and Psychiatry. The item of MSSQ were rated under 5 categories of responses (causing no stress at all, causing mild stress, causing moderate stress, causing high stress, causing severe stress) to indicate intensity of stress caused by the items.

Preliminary try-out

The items were arranged as shown in table 1, and administered to a sample of 141 final year medical students of 2007/2008 academic session to check their applicability and face validity during face-to-face session. The students were encouraged to express their doubts freely. Necessary modifications were made with the experience gained through this preliminary try-out.

Table 1: The theoretical constructs, reliability analysis and factor analysis of MSSQ.

No	Items	Hypothetical groups*	[a]Corrected Item-Total Correlation	[a]Cronbach's Alpha if Item Deleted	[b]Factor loading	[b]Factor
1	Tests/examinations	ARS	0.560	0.951	0.737	I
2	Falling behind in reading schedule	ARS	0.592	0.951	0.691	I
3	Large amount of content to be learnt	ARS	0.611	0.951	0.793	I
4	Having difficulty understanding the content	ARS	0.600	0.951	0.700	I
5	Getting poor marks	ARS	0.584	0.951	0.664	I
6	Quota system in examinations	ARS	0.558	0.951	0.569	I
7	Lack of time to review what have been learnt	ARS	0.652	0.950	0.732	I
8	Need to do well (self-expectation)	ARS	0.586	0.950	0.644	I
9	Learning context – full of competition	ARS	0.646	0.950	0.570	I
10	Unable to answer the questions from the teachers	ARS	0.631	0.950	0.581	I
11	Heavy workload	ARS	0.629	0.950	0.564	I
12	Participation in class discussion	GARS	0.563	0.951	0.793	IV
13	Participation in class presentation	GARS	0.568	0.951	0.789	IV
14	Need to do well (imposed by others)	GARS	0.624	0.950	0.567	IV
15	Feeling of incompetence	GARS	0.652	0.950	0.494	IV
16	Unjustified grading process	ARS	0.612	0.951	0.363	I
17	Not enough medical skill practice	ARS	0.627	0.950	0.485	I
18	Lack of time for family and friends	SRS	0.509	0.951	0.438	V
19	Teacher – lack of teaching skills	TLRS	0.528	0.951	0.630	III
20	Not enough study material	TLRS	0.592	0.951	0.520	III
21	Unable to answer questions from patients	SRS	0.608	0.951	0.437	V
22	Inappropriate assignments	TLRS	0.563	0.951	0.426	III

23	Talking to patients about personal problems	**SRS**	0.397	0.952	0.600	**V**
24	Facing illness or death of the patients	**SRS**	0.403	0.952	0.446	**V**
25	Conflicts with other students	**IRS**	0.563	0.951	0.582	**II**
26	Poor motivation to learn	**IRS**	0.618	0.951	0.337	**II**
27	Verbal or physical abuse by other student(s)	**IRS**	0.545	0.951	0.816	**II**
28	Verbal or physical abuse by teacher(s)	**IRS**	0.528	0.951	0.820	**II**
29	Verbal or physical abuse by personnel(s)	**IRS**	0.527	0.951	0.868	**II**
30	Conflict with personnel(s)	**IRS**	0.547	0.951	0.766	**II**
31	Conflict with teacher(s)	**IRS**	0.517	0.951	0.812	**II**
32	Unwillingness to study medicine	**DRS**	0.464	0.951	0.734	**VI**
33	Parental wish for you to study medicine	**DRS**	0.449	0.952	0.783	**VI**
34	Lack of guidance from teacher (s)	**TLRS**	0.583	0.951	0.743	**III**
35	Not enough feedback from teacher (s)	**TLRS**	0.575	0.951	0.767	**III**
36	Uncertainty of what is expected of me	**TLRS**	0.602	0.951	0.516	**III**
37	Lack of recognition for work done	**TLRS**	0.671	0.950	0.503	**III**
38	Working with computers	**SRS**	0.427	0.952	0.587	**V**
39	Frequent interruption of my work by others	**SRS**	0.549	0.951	0.467	**V**
40	Family responsibilities	**DRS**	0.472	0.951	0.428	**VI**

*Theoretical constructs; **ARS** = Academic Related Stressor, **IRS** = Intrapersonal & Interpersonal Related Stressor, **TLRS** = Teaching & Learning Related Stressors, **SRS** = Social Related Stressors, **DRS** = Drive & Desire Related Stressors, **GARS** = Group Activities Related Stressors.

[a] Reliability analysis; Cronbach's alpha
[b] Factor analysis; Principal Component Analysis with rotation of Varimax.

Validation study

The preliminary form used for this study contained 40 items. For this study, all medical students (from first year to fifth year) of 2008/2009 academic session in the School of Medical Sciences, Universiti Sains Malaysia were selected as study subjects. Proper instructions were given before the administration of the scale. The

subjects were asked to respond to all the statements and no time limit was imposed. During the time of administration the investigator gave proper assistance and directions whenever and wherever necessary.

Collection of data

The investigator obtained permission and clearance from the School of Medical Sciences and Human Ethical Committee of Universiti Sains Malaysia. The investigator requested 1065 medical students to fill in the MSSQ. Completion of the questionnaire was voluntary and would not affect the students' progress in the course. A few facet-t-face sessions were held with the students according to the year of study. Data was collected by guided self-administered questionnaire. The time taken by the students for filling in the MSSQ was around 15 minutes. The questionnaires were collected on the same day.

Study subjects

Population of this present study was 1065 medical students from first year to fifth year of 2008/2009 academic session in the School of Medical Sciences, Universiti Sains Malaysia. All of them were selected as study subjects.

Reliability analysis

Reliability analysis was done to determine the reliability of the questionnaire. Internal consistency of the items was measured by using Cronbach's alpha coefficient. For an estimation of reliability, statistical reliability of individual items was done. Items with

corrected-item total correlation value of more than 0.3 were selected and items with corrected-item total correlation value of less than 0.3 were deleted. The Cronbach's alpha if item-deleted value could determine which item highly contributed to the reliability of the MSSQ. If the Cronbach's alpha value for those items-deleted decreased, it would indicate that the items highly contributed to alpha value. In contrast, if the Cronbach's alpha value for those items-deleted increased, it would indicate that the items poorly contributed to alpha value. The items of MSSQ were considered to represent a measure of high internal consistency if the total alpha value was more than 0.7 [30].

Factor Analysis

Collected data was analysed using Statistical Packages Social Sciences (SPSS) version 12. Factor Analysis was done to determine the construct validity of the MSSQ. Kaiser-Meyer-Olkin (KMO) test and Bartlett's test of sphericity was applied to measure the sampling adequacy [31]. The sample was considered adequate if i) KMO value was more than 0.5 and ii) Bartlett's test was significant (p-value less than 0.05). Principal Component Analysis (PCA) method was

applied in extraction of components. Components with Eigenvalues of over 1 were retained as components. With the assumption of all items were uncorrelated with each other, Varimax rotation was applied in order to optimize the loading factor of each item on the extracted components. Items with loading factor of more than plus or minus 0.3 were considered as an acceptable loading factor.

Results

A total of 761 (71.5%) out of 1065 medical students responded. 474 (62.3%) were female students. The years of study were almost equally represented; 213 students (28%) from year one, 104 students (13.7%) from year two, 159 students (20.9%) from year three, 139 (18.3%) from year four and 146 (19.2%) from year five. 459 (60.4%) were Malay, 266 (35%) Chinese, 33 (4.3%) Indian and 3 (0.3%) others. A total of 462 (60.7%) were Muslim, 206 (27.1%) Buddhist, 53 (7%) Christian, 29 (3.8%) Hindu and 11 (1.4%) others.

Reliability analysis

Table 1 showed all the questions had corrected-item total correlation of more than 0.3. Thus all the items were selected to be included in the questionnaire. Cronbach's

alpha values of the items ranged from 0.950 – 0.952. The total alpha value was 0.952. This analysis suggested that the items of MSSQ were reliable as having high internal consistency.

Factor analysis

The sample was adequate as indicated by i) a KMO value of 0.949 and ii) Bartlett's test of sphericity being significant (p-value < 0.001).

Table 2 showed the total number of components that was extracted using PCA with rotation method of Varimax. Although there were seven components having Eigenvalues more than 1, the extraction was forced into 6 factors. The extraction result was shown in table 1. The factor analysis showed that all the items were constructed according to the hypothetical groups.

Table 2: Total Variance Explained

Component	Initial Eigenvalues			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	14.190	35.474	35.474	6.612	16.529	16.529
2	3.390	8.474	43.948	4.876	12.189	28.718
3	1.796	4.490	48.438	3.714	9.286	38.005
4	1.446	3.615	52.053	3.428	8.571	46.575
5	1.409	3.522	55.575	2.638	6.594	53.169
6	1.211	3.028	58.603	2.173	5.433	58.603
7	1.005	2.512	61.114			
8	.964	2.409	63.523			
9	.870	2.176	65.699			
10	.811	2.027	67.727			

Extraction Method: Principal Component Analysis with rotation methods of Varimax.

Reliability analysis of stressor groups

Table 3 showed the Cronbach's alpha values of each stressor group. Cronbach's alpha values of

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the items ranged from 0.646 to 0.921. This analysis suggested that the stressor groups were reliable as having high internal consistency

Table 3: Cronbach's Alpha value of stressor groups.

Stressor groups	Cronbach's Alpha
Academic Related Stressors (ARS)	0.921
Inter and Intrapersonal Related Stressors (IRS)	0.895
Teaching and Learning Related stressors (TLRS)	0.858
Social Related Stressors (SRS)	0.710
Drive and Desire Related Stressors (DRS)	0.646
Group Activities Related Stressors (GARS)	0.728

Discussion

Reliability generally is defined as consistency or reproducibility of measurement over time or occasions, whereas validity is generally defined as to what extent the measurement measures what it should measure [30, 32, 33]. The purpose of this present study is to determine the validity and reliability of a newly developed instrument, the MSSQ, which could be used in identifying stressors among medical students. Cronbach's alpha value is commonly used by researchers in determining the internal consistency of an instrument, whereas factor analysis process is used to determine the construct of an instrument. In this study, the same analyses

were applied in order to determine the internal consistency and construct of the MSSQ.

The findings from reliability analysis suggested that all the preliminary 40 items have corrected-item total correlation value of more than 0.3 as shown in table 1, therefore all the items were included in the MSSQ. All the items have shown a measure of high internal consistency as having Cronbach's alpha value of more than 0.7 as shown in table 1, reflecting the reliability of the MSSQ. The findings were evidence to support and suggest that the MSSQ was a reliable instrument that could be used in the future to indentify stressors among medical students.

The factor analysis has shown that the 40 items were loaded into the six hypothetical groups as shown in table 1. All the items fit very well according to the six groups as all the items had loading factor of more than 0.3. It reflected that the MSSQ had a good construct. It was evident that the MSSQ measured what it should measure. The findings were evidence to support and suggest that the MSSQ was a valid instrument to determine stressors among medical students. It is noteworthy that this present study just explored the possible constructs of the MSSQ, thus it is recommended that confirmatory factor analysis should be done in the future study to test and verify the hypothesis that a relationship between the observed variables and their underlying latent constructs exists. The findings from reliability analysis have shown that all the stressor groups of have shown a measure of high internal consistency as having Cronbach's alpha value more than 0.7 except DRS group as shown in table 3. These findings were another evidence to support and suggest that the MSSQ was a reliable instrument to identify stressors among medical students.

Conclusion

This study showed that MSSQ had a good psychometric value. It is a valid and reliable instrument that can be used in the future to identify stressors among medical students.

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ORIGINAL ARTICLE

FACTORS INFLUENCING INPATIENT DURATION AMONG INSANITY ACQUITTEES IN A MALAYSIAN MENTAL INSTITUTION

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Abstract

Objective: According to Malaysian law, defendants found not guilty by reason of insanity may be admitted to a psychiatric hospital and discharge is subject to the state ruler's assent. The objective of this study is to examine the clinical, socio-demographic and forensic factors that influence inpatient duration of insanity acquittees in a Malaysian mental institution. *Methods:* This is a cross-sectional study of one hundred and twelve insanity acquittee inpatients in Hospital Bahagia Ulu Kinta from January 2007 to February 2007. Patients with a clinical diagnosis of schizophrenia, major depressive disorder and bipolar disorder were assessed using the Positive and Negative Syndrome Scale (PANSS), Hamilton Depression Rating Scale (HAMD) and Young Mania Rating Scale (YMRS) respectively. Other relevant socio-demographic, clinical and forensic factors were also assessed. *Results:* The inpatient duration varied widely from three months to forty-seven years with a median of seven years. Seventy five percent of patients were in remission. According to the multiple linear regression model, the strongest predictor of a longer duration of hospital stay for insanity acquittees was older age (p<0.001) followed by murder as the index offence (p=0.005). Good family support predicted a shorter inpatient duration. This model explains 56% of the variance in the inpatient duration. C*onclusion:* Social factors such as family support may be increasingly important in determining the discharge process of insanity acquittees besides clinical rehabilitation. Issues such as stigma of violent forensic patients and the role of community forensic rehabilitation services need to be further explored. *ASEAN Journal of Psychiatry, Vol.11 (1): Jan – June 2010: 25-35.*

Keywords: Forensic psychiatry, insanity acquittees, inpatient duration

Introduction

According to Malaysian law, defendants found not guilty by reason of insanity (insanity acquittees), can be involuntarily admitted to a psychiatric institution for treatment and rehabilitation. These patients will be sent by the court under section 348(i) of the Criminal Procedure Code (CPC) to an approved psychiatric hospital established under the Mental Disorders Ordinance 1952. Subsequently, after the State Secretary's Office facilitates the conversion of the court order to section 348(ii) CPC, insanity acquittees will essentially remain hospitalized at the pleasure of the State Ruler. The discharge process requires initiation either by the hospital under section 350 CPC or by the patient's relatives under section 351 CPC. Finally, approval from the Medical Director of the hospital, Board of Visitors as well as consent from the State Ruler is mandatory. This highly structured administrative process reflects the high degree of public concern over the risk that insanity acquittees present to the community [1].

Research has shown that the severity of offense committed by insanity acquittees stands out as a significant factor that can predict a longer inpatient duration [2,3]. Also, lengthy periods of inpatient care are common in this population. A study among 225 insanity acquittees showed that more than 50% were hospitalized for at least 2 years. In 10% of the cases, the duration was more than 5 years. Reoffending rates were significantly higher among those who had a history of conviction prior to the index offense [4]. Rehospitalization and rearrest were associated with significantly lower rates of full symptom remission based on subjective impressions by clinicians [5].

There is a need to adopt an outcome focus in this population. Inpatient duration has been studied as an important outcome among these patients [6]. This would reflect on the factors influencing the decision to discharge and assimilate insanity acquittees back into the community as part of the rehabilitative process. Currently, there is no local published data available in terms of factors influencing the inpatient duration of insanity acquittees. Therefore, this study aims to determine clinical, sociodemographic and forensic factors that affect the inpatient duration of insanity acquittees; which will have significant implications on clinical rehabilitation and risk management of these patients in the community as well as mental health policy development locally.

Methods

All 119 insanity acquittees in Hospital Bahagia Ulu Kinta (HBUK) who were inpatients in the forensic wards under section 348(ii) CPC were recruited in this study from 2nd of January to the 16th of February 2007. A total of 7 patients were excluded, leaving a study sample of 112 who gave written informed consent prior to the study participation. Two patients were too psychotic to be interviewed, two were mute, two refused consent and one patient (Thai national) could not comprehend English or Malay.

The socio-demographic, clinical (including clinical diagnosis made by a consultant psychiatrist) and forensic data were collected from the patients' case notes and via a clinical interview. The abbreviated Positive and Negative Syndrome Scale (abbreviated PANSS) was administered in patients with a diagnosis of schizophrenia to determine the status of remission. This is in

accordance with the Remission in Schizophrenia Working Group [7] whereby remission is defined as simultaneous attainment of a score of 3 (mild), 2 (minimal), or 1 (absent) for a minimum duration of 6 months for all the items in the abbreviated PANSS. In patients with a diagnosis of bipolar disorder, the Young Mania Rating Scale (YMRS) was administered whereby remission was defined as a YMRS score of equal or less than 12. Patients with a diagnosis of Major Depression were defined as being in remission with a Hamilton Rating Scale for Depression (HAMD) score of equal or less than 7. The remission status of patients with other diagnoses were assessed clinically. The administration of the above-mentioned

rating scales were conducted by four trained post-graduate (Masters-level) psychiatry trainees.

Data were entered into SPSS version 12. The inpatient duration was compared between sociodemographic, clinical and forensic groups using the following statistical tests: Kendall, Kruskal-Wallis, non-parametric ANOVA and Mann-Witney U test. After bivariate analysis, independent predictive factors of inpatient duration were determined using multiple linear regression. Significance level was set at $p < 0.05$.

The Ethics Committee of Hospital Bahagia Ulu Kinta granted ethical approval for this study.

Figure 1: Summary of study respondents
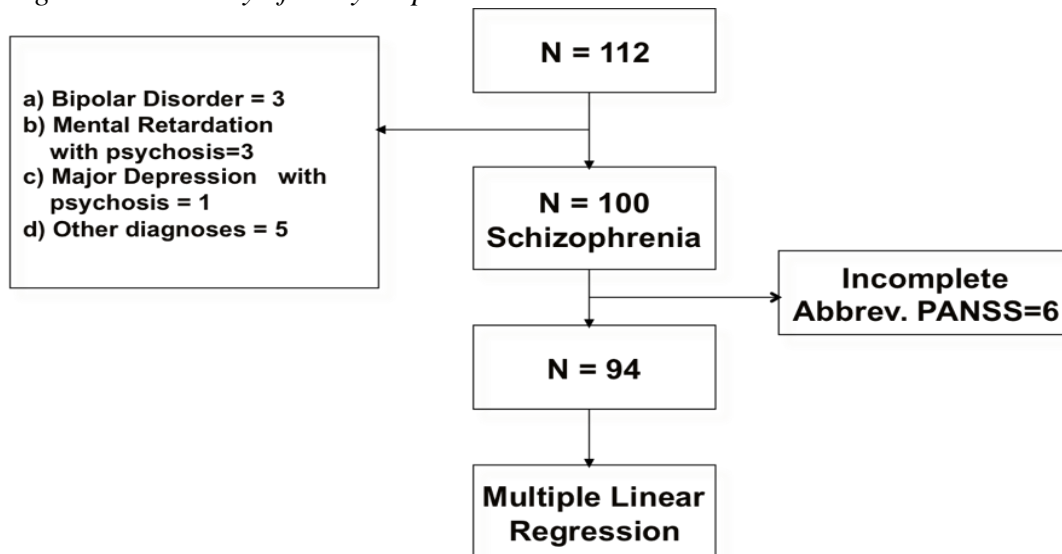
Results

The study population of 112 insanity acquittees were predominantly male (90.2%) with a median age of 43 years at the time of the study. Overall, the inpatient duration had a wide range from 3 months to 47 years. The majority of patients stayed for less than 10 years (66%).

Patients who were older at the time of the study had significantly longer duration of hospital stay (p<0.001). The racial composition of these patients were fairly representative of the racial composition in Malaysia, i.e. Malay (51.8%), Chinese (33.9%), Indian (11.6%) and others (2.7%). Ethnicity was not significantly associated with inpatient duration. Patients who were Buddhist had significantly longer inpatient duration (p=0.041).

Table 1. Inpatient duration of insanity acquittees and sociodemographic factors (i)

	n (%)	Inpatient duration (median months)	p-value
Total, n	112(100)	84.0	
Age			<0.001
<43 years	57(50.9)	41.5	
>43 years	55(49.1)	134.0	
Gender			0.934
Male	101(90.2)	78.0	
Female	11(9.8)	93.0	
Ethnicity			0.348
Malay	58(51.8)	86.5	
Chinese	38(33.9)	78.0	
Indian	13(11.6)	106.0	
Others	3(2.7)	24	
Religion			0.041
Islam	62(55.4)	70.0	
Christian	5(4.5)	14.0	
Buddhist	25(22.3)	133.0	
Hindu	13(11.6)	128.0	
Others	7(6.3)	42.5	

Table 2. Inpatient duration of insanity acquittees and sociodemographic factors (ii)

	n (%)	Inpatient duration (median months)	p-value
Marital status			0.617
Single	73(65.2)	70.5	
Married	24(21.4)	55.0	
Separated	3(2.7)	108.0	
Divorced	8(7.1)	120.0	
Widowed	4(3.6)	140.5	
Educational level			<0.001
No formal education	7(6.3)	295.0	
Primary	37(33.0)	117.0	
Secondary	67(59.8)	52.0	
Tertiary	1(0.9)	68.0	
Employment status before admission			0.051
Unemployed	22(19.6)	152.5	
Home-maker	6(5.4)	70.0	
Student	1(0.9)	102.0	
Employed	83(74.1)	70.0	
Living arrangement before admission			0.713
Alone	10(8.9)	48.0	
With others	102(91.1)	84.0	
Family support			<0.001
Good	35 (31.3)	30.0	
Poor	77 (68.8)	120.0	
Working in the hospital			0.017
Yes	53(47.3)	52.0	
No	59(52.7)	120.0	

Educational level was also a significant factor associated with inpatient duration whereby those with no formal education tended to stay much longer (median = 295 months or 24.6 years, p<0.001). Patients who were unemployed before admission also tended to be hospitalized longer. This association approached statistical significance (p=0.051). After admission, patients who were not working in the

hospital stayed almost twice as long as those who were working in the hospital (p=0.017). Family support was categorized as good if the patients' family were contactable and keen for them to be discharged home. Conversely, if the family was not contactable and not keen for discharge, family support was considered poor. Patients who had poor family support were hospitalized 4 times longer than those with good family support (p<0.001).

Table 3. Inpatient duration of insanity acquittees and clinical factors.

	n (%)	Inpatient duration (median months)	p-value
Diagnosis			0.391
Schizophrenia	100(89.3)	86.5	
Bipolar disorder	3(2.7)	24.0	
Major depression with psychosis	1(0.9)	15	
Mental retardation with psychosis	3(2.7)	151.0	
Psychotic disorder due to epilepsy	2(1.8)	95.0	
Delusional disorder	1(0.9)	68	
Mood disorder due to general Medical condition	2(1.8)	51	
Remission status			0.001
In remission	84(75)	60.0	
Not in remission	28(25)	128.0	
PANSS score			
Positive scale	Median score=3		0.019
<3	56(50)		
>3	56(50)		
Negative scale	Median score =5		<0.001
<5	52(46.4)		
>5	60(53.6)		
General psychopathology scale	Median score =2		0.056
<2	63(56.3)		
>2	49(43.8)		
Total	Median score =11		<0.001
<11	52(46.4)		
>11	60(53.6)		
Comorbidity			
Medical illness	38(33.9)	120.5	0.013
History of substance abuse	44(39.3)	60.0	0.041

Schizophrenia was the primary diagnosis in 89.3% of the cases followed by psychotic disorder secondary to mental retardation or epilepsy (4.5%), primary mood disorders (3.6%), mood disorders due to general medical condition (1.8%) and delusional disorder (0.9%). The type of diagnosis was not significantly associated with inpatient duration. The majority of patients were in remission (75%) and had a significantly shorter inpatient duration (median=60 months or 5 years) compared to those who were not in remission (median=128 months or 10.7 years, p=0.001). This is also reflected in the significantly positive correlation between total PANSS scores and inpatient duration (p < 0.001). Among the 3 patients who had a diagnosis of bipolar disorder, 2 were in remission with YMRS scores of 3 and 4 respectively. The 3rd patient had an incomplete YMRS score. One patient who had a diagnosis of major depression with psychosis had a HAMD score of 0. Patients with comorbid medical illness were also hospitalized nearly twice as long compared to those without comorbid medical illness (p=0.013). A history of substance abuse was present in 39.3% of patients and they had a significantly longer inpatient duration compared to those without substance abuse (p=0.041).

Table 4. Inpatient duration of insanity acquittees and forensic factors.

	n (%)	Inpatient duration (median months)	p-value
No. of past convictions			0.119
None	93(83.0)	88.5	
1	16(14.3)	47	
2	1(0.9)	84	
3	1(0.9)	0	
4	1(0.9)	135	
>5	1(0.9)	3	
Severity (type) of index offence			
Murder	51(45.5)	130.5	0.001
Non-murder	61(54.5)	53.0	
Violent	105(93.8)	89.0	0.039
Non-violent	7(6.3)	22.0	

The insanity acquittees in this study were predominantly violent offenders (93.8%). Murder was the most common index offense (45.5%), followed by voluntarily causing hurt by dangerous weapons (14.3%) while other violent crimes accounted for 34% of index offences. The severity of index offence was significantly associated with a longer inpatient duration (violent crime, p=0.039; murder, p=0.001).

Table 5: Factors significantly associated with a longer inpatient duration of insanity acquittees using multiple linear regression.

Variables	Unstandardized Coefficients		Standardized Coefficients	t statistic	p value	95% CI* for B	
	B	Std Error	Beta				
Age	5.1	0.958	0.532	5.326	<0.001	3.198	7.002
Good family support	-52.643	24.966	-0.212	-2.109	0.038	-102.235	-3.051
Murder as index offense	55.068	19.063	0.238	2.889	0.005	17.203	92.934

An outlier (outside 3 standard deviations) who was hospitalized for 565 months (47 years) was excluded in this model.

According to the multiple linear regression model, the strongest predictor of a longer inpatient duration for insanity acquittees was older age (Beta = 0.532), followed by murder as the index offence (Beta = 0.238). Good family support was an independent protective factor (Beta = -0.212). In other words, insanity acquittees with good family support were hospitalized for a significantly shorter duration. This model explains 56% of the variance on inpatient duration (Coefficient of determination, $R^2 = 0.555$).

Discussion

This study's findings concur with previous research in the West which have repeatedly shown that severity of offense is one of the major factors that significantly contribute to a longer inpatient duration among insanity acquittees [2,3,8]. There is some evidence to suggest that punishment is deemed appropriate for insanity acquittees and is accomplished by invoking the concept of dangerousness; which is presumed future violent behaviour [2,9]. This may be explained by the fact that severity of offense has been used as an indicator of dangerousness that may influence decision-making in the discharge process. Quinsey and Maguire [10] found that forensic clinicians who classified insanity acquittees as dangerous based their judgement to a large extent upon the seriousness of the index offense.

The majority of patients in this study were found to be in remission in terms of psychiatric disorders and they were shown to have a significantly shorter inpatient duration. This may reflect the clinical decision to discharge which is probably related to the concept of dangerousness whereby the risk of future violent behaviour has been shown to be associated with active symptoms of major mental disorders [11,12].

Family support was shown to be an independent predictive factor of inpatient duration but not remission status. This seems to suggest that poor family support may be a barrier in terms of discharge of insanity acquittees who have already achieved clinical stability and adequate rehabilitation. Haque [13] attributed the challenge of community placement of patients from mental institutions (including forensic patients) in Malaysia to the lack of ongoing family support.

Taking into consideration that the severity of offense especially in the case of murder was shown to be another independent predictor of longer inpatient duration, it may be postulated that poor family support is related to the strong stigma attached to violent mental disorder offenders. Therefore, the impact of stigma on inpatient duration of insanity acquittees needs to be explored in future research.

Buddhism was shown to be significantly associated with a longer inpatient duration. This may suggest the cultural role of religion as a factor in determining inpatient duration. However, this was not an independent predictive factor. Thus, the possible interplay between culture and family support needs to be researched further in order to delineate the potential mediating factors involved in family support.

Patients with a higher educational level, without any history of substance abuse and who were under job rehabilitation in the hospital had a significantly shorter inpatient stay which seemed reflective of these factors as good prognostic indicators.

The significant association between older age and longer inpatient duration is expected as the age of the patient was taken at the point of entry into the study. The actual significance of age as an independent predictive factor of inpatient duration may be better understood if the age of the patient was calculated at the point of admission.

Insanity acquittees who have an active major psychiatric disorder and a severe index offense may reflect a central issue of whether they pose an unacceptable risk of dangerousness if they were to be discharged into the community. Therefore, the importance of clinical rehabilitation with the

aim of achieving remission as well as the role of risk assessment prior to discharge are of paramount importance. Such assessments aided by risk assessment instruments, such as the Historical Clinical Risk-20 (HCR-20) which combines actuarial and clinical risk assessment, should be considered. Therefore, the risk of reoffending among this population can be much more reliably assessed [14].

Also, public demands for safety can probably be met by shorter inpatient periods and a longer community period of intensive monitoring and support, with unobstructed access to hospital readmission. A balance needs to be struck between ensuring managing the residual risk these patients pose to the community and optimizing the much-often stretched resources of community-based treatment towards a paradigm shift away from the many well-known disadvantages of institutionalization among forensic patients [8].

Family cohesion is still largely intact in the Malaysian context [15]. This is an area that can be harnessed as a potentially strong resource to support the process of rehabilitation and assimilation of clinically stable insanity acquittees back into the community. Therefore, strategies to improve family engagement such as psychoeducation and efforts to reduce the stigma of mentally ill offenders needs to be emphasized [16].

Insanity acquittees have been found to have high rates of comorbid substance abuse which needs to be addressed in the process of rehabilitation and may affect inpatient duration as well as risk assessment of violent reoffending prior to discharge. Simpson et al [17] showed that 78% of insanity acquittees had a comorbid alcohol/substance abuse or dependence. However, this study showed that only 39.3%

of patients had a history of substance abuse. Though this factor was significantly associated with inpatient duration, it was not an independent predictive factor. Substance abuse may have been underreported in the process of documentation as well as been subjected to recall bias. Improved methods documenting comorbid substance abuse on admission and obtaining corroborative information in future studies may be more helpful in examining this important issue.

The reliability of the PANSS, YMRS and HAMD score could be improved by measuring the inter-rater reliability of the assessors with kappa coefficient. Only patients with a diagnosis of schizophrenia were finally analyzed using multiple linear regression as due to the small number of patients with other diagnoses. In addition, this study is confined to one mental institution. Thus there is limited generalizability to the rest of the insanity acquittees in other psychiatric hospitals with forensic services in Malaysia. Therefore, future multi-centred studies are recommended.

Another limitation of this study is the measurement of family support. The use of a more refined rating scale such as the Perceived Social Support Scale [18] may be included in future studies. A potential factor which may influence the inpatient duration of insanity acquittees in this country is the role of administrative bureaucracy (paper-work "red-tape") in the discharge process of these patients. This factor was not studied due to the limited resources in the process of data collection which would involve inter-government-agency networking. This may be an area of further research in future.

Finally, conclusions about causal relationships between the variables and outcomes studied cannot be made from a cross-sectional design. Therefore, future prospective studies would also be recommended in order to gain a better understanding of the complex interplay of factors involved in the rehabilitation of forensic patients with the aim of improving forensic mental health services.

Social factors such as family support may play an increasingly important role in the discharge process of insanity acquittees besides clinical rehabilitation. This is reflective of the challenging process of assimilating them back into the community. Issues such as stigma of violent offenders with psychiatric illness and the role of family engagement as well as public perception need to be addressed in the context of future forensic rehabilitation services.

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ORIGINAL ARTICLE

THE SENSITIVITY, SPECIFICITY AND RELIABILITY OF THE MALAY VERSION 12-ITEMS GENERAL HEALTH QUESTIONNAIRE (GHQ-12) IN DETECTING DISTRESSED MEDICAL STUDENTS.

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Abstract

Objective: **To determine the sensitivity, specificity and internal consistency of the Malay version GHQ-12 among medical student population. This study determined the appropriate GHQ-12 score to detect distressed medical students.** *Methods***: The Malay version of GHQ-12 was derived based on two sources which were the original version GHQ-12 and the validated Malay version 30-items GHQ. The GHQ-12 and the Malay version Beck Depression Inventory-II (BDI-II) were administered to a total of 141 medical students. Distress diagnoses were made based on the Malay version BDI-II. ROC curve analysis was applied to determine the sensitivity and specificity of the GHQ-12 by testing against the BDI-II. Reliability analysis (Cronbach's alpha and item total correlation) was applied to test internal consistency of the GHQ-12. The analysis was done using SPSS version 12.** *Results***: The GHQ-12 sensitivity and specificity at cut-off point of 3/4 was 81.3% and 75.3% respectively with positive predictive value (PPV) of 62.9% as well as area under ROC curve more than 0.7. The Cronbach's alpha value of the GHQ-12 was 0.85.** *Conclusion***: This study showed the Malay version GHQ-12 is a valid and reliable screening tool in detecting distressed medical students. The GHQ-12 score equal to or more than 4 was considered as significant distress.** *ASEAN Journal of Psychiatry, Vol.11 (1): Jan – June 2009: 36-43.*

Keywords: **Reliability,validity,medical students,General Health Questionnaire (GHQ)**

Introduction

The General Health Questionnaire (GHQ) is widely used internationally and locally [1-7] to measure mental health status especially in detection of emotional disorders such as distress. Since Goldberg introduced the GHQ in 1978, it has been translated into 38 different languages, testament to the validity and reliability of the questionnaire [4]. Reliability coefficients of the questionnaire have ranged from 0.78

to 0.95 in various studies [4]. It has four versions based on the number of items; GHQ-60, GHQ-30, GHQ-28 and the shortest version GHQ-12. Each item is accompanied by four responses, typically being 'not at all', 'no more than usual', 'rather more than usual' and 'much more than usual'. There are two recommended methods for scoring the GHQ. The first scoring method ranged from 0 to 3 respectively. The second scoring method was binary scoring method (with the two least symptomatic answers scoring 0 and the two most symptomatic answers scoring 1 – i.e. 0-0-1-1). The total possible score on GHQ-28 ranges from 0 to 84 and allows for means and distributions to be calculated, both for the global total, as well as for the four sub-scales (somatic symptoms, anxiety/insomnia, social dysfunction and severe depression). Using the alternative binary scoring methods the 28- and 30-items versions classify any score exceeding the threshold of 4 as achieving 'caseness'. The caseness threshold is 3 for the 12-item version. The shortened version work was found to be as reliable as the long version in detecting distress [3]. The GHQ-12 was commonly used as its validity is well-established internationally [8, 9] and locally [1, 2]. It was also used because of its popular use in student sample [9] and young populations in the community [8]. Furthermore it is simple, easy to understand, short and straightforward to complete. However, most of the validation studies have been done in the western countries [7] and hardly found in the Malaysian studies especially for medical student population.

The purpose of this study is to determine the sensitivity, specificity and reliability of the Malay version GHQ-12 among medical student population particularly in Malaysia. It is also to determine the appropriate GHQ score in detecting distress in the population.

Methods

Development of the Malay version GHQ-12

The Malay version of GHQ-12 was derived based on two sources which were the original version GHQ-12 [10] and the validated Malay version 30-items GHQ [1]. These sources have provided the blueprint for the development of the Malay version GHQ-12. The language of item was made simple and suitable to express the concept implied.

Expert evaluation of the items

In order to establish the content validity of the Malay version GHQ-12, the items were subjected to jury technique. The experts were drawn from the field of Psychiatry. The jury group was formed by a psychiatrist and only psychiatrists who have more than 3 years experience were chosen as jury members. The items of the GHQ-12 were rated under 4 categories of responses; *tiada langsung* (not at all) , *tidak lebih dari biasa* (no more than usual), *lebih dari biasa* (more than usual), *sangat lebih dari biasa* (much more than usual) for statements: 1, 2, 7, 10, 11 and 12 as shown in Table 2, whereas, for the rest of the statements the responses were *lebih dari biasa* (more than usual), *tidak lebih dari biasa* (no more than usual), *kurang dari biasa* (less than usual) and *sangat kurang dari biasa* (much less than usual). The scoring method was a binary scoring method whereby the two least symptomatic answers score 0 and the two most symptomatic answers score 1 – i.e. 0-0-1-1. The minimum GHQ-12 total score was 0 and the maximum GHQ-12 total score was 12.

Preliminary try-out

The items were arranged as shown in Table 2, and administered to a sample of 48 medical students to check the comprehensibility and face validity during face-to-face session. The students were encouraged to express their doubts freely. The students were given 30 minutes to go through all the items individually and another 30 minutes to express their thoughts about the items to the investigator. Necessary modifications were made with the experience gained through this preliminary try-out.

Validation study

The Malay version GHQ-12 used for this study contained 12 items. Population of this study was 1065 medical students of 2008/2009 academic session in the School of Medical Sciences, Universiti Sains Malaysia. Proper instructions were given before the administration of the scale. The subjects were asked to respond to all the statements and no time limit was imposed. During the time of administration the investigator gave proper assistance and directions whenever and wherever necessary.

Sample size

Sample size calculated based on recommended ratio which was 10 subjects per item (11) with 20 percent dropout rate was 150 subjects. Convenient sampling method was applied; 50 second year medical students and 100 fifth year medical students were asked to participate in this study.

Collection of data

The investigator requested 150 medical students from second year and fifth year to fill in the GHQ-12. Completion of the questionnaire was voluntary and would not affect the students' progress in the course. A face-to-face session was held with the students in a hall. Data was collected by guided self-administered questionnaire. The time taken by the students to fill in the questionnaire was around 10 minutes. The questionnaires were collected on the same day. Verbal consent was taken from the students. The investigator obtained permission and clearance from the School of Medical Sciences and Human Ethical Committee of Universiti Sains Malaysia.

Reliability analysis

Reliability analysis was done using SPSS version 12 to determine the internal consistency of the items measured by using Cronbach's alpha coefficient. For an estimation of reliability, statistical reliability of individual items was done. Items with Cronbach's alpha value if item-deleted could determine which statement highly contributed to the alpha value. If the Cronbach's alpha value for those items-deleted were decreased, it indicated that the items were highly contributed to alpha value. In contrast, if the Cronbach's alpha value for those items-deleted increased, it indicated that the items poorly contributed to alpha value. The items of the GHQ-12 were considered to represent a measure of high internal consistency if the Cronbach's alpha value was more than 0.7 [12].

Sensitivity and specificity analysis

Distress detection was made based on the Malay version BDI-II. The BDI-II score equal to and more than 9 was considered as positive score for significant distress [13]. In order to determine the sensitivity and specificity, the GHQ-12 was tested against the distress diagnoses made by the BDI-II. The Receiver Operating Characteristics (ROC) curve analysis was done using SPSS version 12 to determine the sensitivity,

specificity, and area under ROC curve. The sensitivity, specificity and area under ROC curve value more than 0.70 was considered as having an acceptable predictive and discriminative value (14). The negative and positive predictive values were calculated manually via Microsoft Excel software.

Results

A total of 141 (94%) out of 150 medical students responded. 99 (70.2%) were female students. 92 (65.2%) were fifth year medical students and 49 (34.8%) were second year medical students. 86 (61.0%) were Malay, 53 (37.6%) were Chinese, 2 (1.4%) were Indian and 3 (0.3%) were others. 86 (61.0%) were Muslim, 37 (26.2%) were Buddhist, 15 (10.6%) were Christian, and 9 (2.1%) were others.

Reliability analysis

Table 1 showed all the items had corrected-item total correlation more than 0.3. Thus all the items were maintained in the questionnaire. The Cronbach's alpha value for the Malay version GHQ-12 was 0.852. This analysis suggested that the items of the GHQ-12 were reliable as having high internal consistency.

Sensitivity and specificity analysis

Table 2 and Figure 1 showed that GHQ score at 3/4 have the optimum sensitivity and specificity which were 81.3% and 75.3% respectively with positive predictive value of 62.9% as well as having area under curve more than 0.7. The analysis showed that the GHQ-12 was considered as having an acceptable predictive and discriminative value in detecting distressed medical students.

Table 1: Reliability analysis on the questions of English-Malay version GHQ-12.

No.	Statements	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Q1	*Kekurangan tidur kerana risau?* (Lost much sleep over worry)	0.400	0.850
Q2	*Sentiasa merasa tertekan/tegang?* (Felt constantly under strain?)	0.519	0.841
Q3	*Boleh menumpukan perhatian kepada apa sahaja yang dibuat?* (Been able to concentrate on what you are doing?)	0.539	0.840
Q4	*Rasa yang anda memainkan peranan yang berguna dalam banyak perkara?* (Felt that you are playing useful part in things?)	0.331	0.853
Q5	*Dapat mengatasi masaalah-masaalah anda?* (Been able to face up to your problem?)	0.573	0.838
Q6	*Merasa mampu membuat keputusan tentang sesuatu?* (Felt capable of making decisions about things?)	0.537	0.840
Q7	*Rasa yang tidak dapat mengatasi kesukaran/ masalah anda?* (Felt you could not overcome your difficulties?)	0.514	0.841
Q8	*Rasa cukup gembira dalam segala hal yang*	0.639	0.832

	difikirkan? (Been feeling reasonably happy, all things considered?)		
Q9	*Dapat menikmati kegiatan harian anda?* (Been able to enjoy your normal day to day activities?)	0.541	0.839
Q10	*Merasa tidak gembira dan sedih?* (Been feeling unhappy or depressed?)	0.629	0.833
Q11	*Telah hilang kepercayaan pada diri anda sendiri?* (Been losing confidence in yourself?)	0.519	0.841
Q12	*Memikirkan diri anda seorang yang tidak berguna?* (Been thinking of yourself as a worthless person?)	0.567	0.839

Total Alpha = 0.852

Table 2: The area under ROC curve, sensitivity, specificity, positive and negative predictive values of different cut-off points for significant distress (detection based on BDI-II).

GHQ score	The Area Under ROC curve	Sensitivity %	Specificity %	PPV %	NPV %
0/1	0.66	95.8	36.6	43.8	94.4
1/2	0.72	89.6	54.8	50.6	91.1
2/3	0.77	87.5	66.7	57.5	91.2
3/4	0.78	81.3	75.3	62.9	88.6
4/5	0.72	60.4	83.9	65.9	80.4
5/6	0.72	56.3	87.1	69.2	79.4
6/7	0.64	39.6	89.2	65.5	74.1
7/8	0.61	27.1	94.6	72.2	71.5
8/9	0.59	20.8	96.8	76.9	70.3
9/10	0.58	16.7	98.9	88.9	69.7
10/11	0.55	10.4	98.9	83.3	68.1
11/12	0.54	2.3	100.0	100.0	66.4

ROC = Receiver Operating Characteristics, **PPV** = Positive Predictive Value, **NPV** = Negative Predictive Value
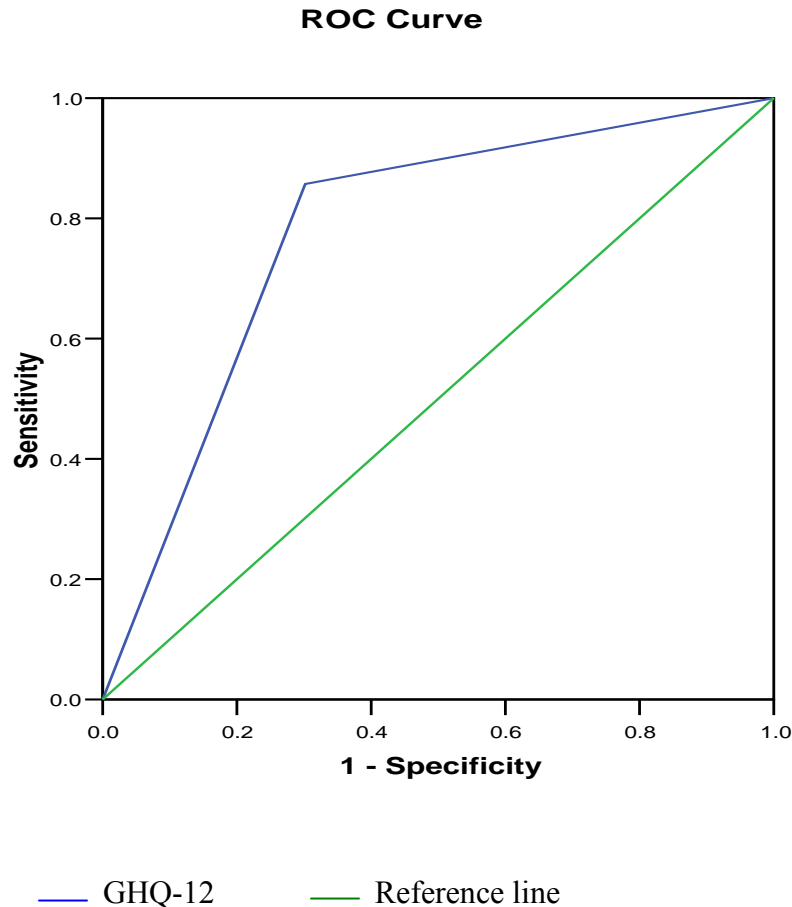
ROC Curve

Figure1: The area under ROC curve of the GHQ score at cut-off points 3/4 for significant distress (diagnoses were based on the BDI-II).

Discussion

Reliability generally is defined as consistency or reproducibility of measurement over time or occasions, whereas validity generally is defined as to what extent the measurement measures what it should measure [12, 15, 16]. Sensitivity is defined as the proportion of persons with disease who test positive, whereas, specificity is defined as the proportion of persons without disease who test negative [14-16]. Therefore sensitivity and specificity describe how well the test predicts and discriminates between patients with and without disease. The accuracy of a test depends on how well the test separates the group being tested into those with and without the disease in question. Accuracy is measured by the area under the ROC curve [14]. The purpose of present study is to determine the sensitivity, specificity and internal consistency of the Malay version GHQ-12 which could be used in detecting distressed medical students. Cronbach's alpha value is commonly used by researchers in determining the internal consistency of an instrument, whereas ROC

curve analysis is used to determine the specificity and sensitivity. In this study, the same analysis was applied to determine the sensitivity, specificity and internal consistency of the Malay version GHQ-12.

ROC curve analysis has shown that the optimum cut-off point to detect distress was 3/4 as shown in Table 1. The analysis has also shown the GHQ score of 3/4 have acceptable predictive and discriminative values as the sensitivity, specificity and area under ROC curve was more than 0.7. It reflected the ability of GHQ-12 to discriminate between distressed and non-distressed medical students. The findings were evidence to support and suggest that the GHQ-12 was a valid instrument to detect distressed medical students. It was noteworthy that present study using the BDI-II as a reference group to compare with the tested instrument which was not the gold-standard method, which usually done through clinical-structured-interview by psychiatrists, in determining the specificity and sensitivity of the instrument. However, present study finding is comparable with the Goldberg et al (1997) finding which yielded sensitivity and specificity about 83.7% and 79.0% respectively.

Findings from reliability analysis suggested that all the 12 items have corrected-item total correlation value more than 0.3 as shown in Table 2; Therefore all the items were maintained in the GHQ-12. All the items have shown a measure of high internal consistency as having Cronbach's alpha value more than 0.7 as shown in Table 2; it reflected the reliability of the GHQ-12. The findings were evidence to support and suggest that the GHQ-12 is a reliable instrument that could be used in the future to detect distressed medical students.

Conclusion

This study showed the Malay version GHQ-12 is a valid and reliable screening tool in detecting distressed medical students. The optimum cut-off point of the GHQ-12 to detect distressed medical students was 3/4.

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ORIGINAL ARTICLE

RELIABILITY OF BAHASA MALAYSIA VERSION OF FAMILY ENVIRONMENT SCALE AND ITS MEASUREMENT ISSUES

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Abstract

Objective: Family Environment Scale (FES) is one of the most widely used instruments to measure many family aspects. Cross cultural adaptation of the original FES is essential prior to local utilization as different cultures percept their family environments differently. We attempted to translate the FES into the Bahasa Malaysia language for adolescents, evaluate its reliability using internal consistency and compare its results with the original study. *Methods*: This is a cross-sectional study, involving adolescents aged 12-17 from four secondary schools. The adolescents were selected using quota sampling for different age, ethnic and academic performance. The study was divided into four phases, namely: i) translation of FES, ii) pilot test iii) internal consistency reliability test and iv) comparison of the study results with the original FES. *Results:* A total of 295 adolescents participated in this study. All of the reliability measurements generated (ranged between Cronbach's alpha 0.10 - 0.70) were lower than those originally reported for this instrument (ranged between Cronbach's alpha 0.61 -0.78). Five subscales in the Bahasa Malaysia version were found to be less than Cronbach's alpha 0.5, which were below the acceptable level for practical or research use. There was considerable variation observed between the sample population of this study and that of the original study, which could be due to the social cultural differences. *Conclusion:* The Bahasa Malaysia version of FES requires further culturally appropriate revision. A new measuring scale could also be devised to provide an accurate evaluation of the family environment as perceived by Malaysian adolescents, which has acceptable levels of reliability and validity. *ASEAN Journal of Psychiatry, Vol.11 (1): Jan – June 2010: 44-55.*

Keywords: Adolescents, Bahasa Malaysia, Family Environment Scale, measurement issues, reliability.

Introduction

Family Environment Scale (FES) is a fairly comprehensive instrument used to measure many family aspects. It focuses on the family dynamic environment related to family cohesion, family communication, affective responsiveness, family adaptation and its relationship with behavioural problems among family members [1-3]. The scale is based on three dimensional conceptualisations of families. There are three separate forms of FES available that correspondingly measure different aspects of these dimensions [4]. The Real form (Form R) measures people's perception of their actual family environments, the Ideal Form (Form I) rewords items to assess individuals' perceptions of their ideal family environment and the Expectations Form (Form E) instructs respondents to indicate what they expect a family environment will be like. In the present study, FES type R was used to measure the adolescents' perception of their real family environment.

The challenges adolescents face today are unique and perhaps even more challenging than adolescents of the past. They seem to face more stress and the local media frequently reports on behavioural problems occurring among adolescents. According to the National Health and Morbidity Survey (NHMS) 2006 in Malaysia [5], the prevalence of psychiatric morbidity amongst children and adolescents was 20.3%, an increase of 7.3%, compared to the prevalence rate of 13% in the NHMS 1996 study [6]. To understand adolescent behaviour better, it is essential to have an instrument that assesses family environment [7]. Data on the family environment has been identified as a powerful contributor to problems among adolescents [8,9]. There are questionnaires that have been invented to measure the family structure, for example,

Family Environment Scale (FES)[4], Family Crisis Oriented Personal Evaluation Scale (F-COPES) [10], Family Functioning Index (FFI) [11], Family Adaptability & Cohesion Evaluation Scale (FACES) [12] and Family Dynamic Environment Scale (FDES) [8]. However, the dilemma faced by researchers in Malaysia is the availability of validated questionnaires in the local language (Bahasa Malaysia). Without validated questionnaires, conclusions from studies done in the local community could be questioned.

In this present study, we attempted to translate FES into the Bahasa Malaysia language to evaluate the family environment of Malaysian adolescents. The Family Environment Scale was developed to assess the interpersonal atmosphere within a family with respect to its relationships, patterns of growth, and its organisational features [4]. The 90-items FES consists of ten subscales, which describe the social environment of the family as perceived by its members [4]. The initial set of items in the FES was developed from structured interviews with members of different types of families and from adaptation of items from other social environment scales [4]. The content of the items were guided by three dimensions of the social environment: interpersonal relationships, personal growth and system maintenance [4]. The Relationship dimension comprises of Cohesion, Expressiveness and Conflict Subscales. The Personal Growth dimension includes assessments of Independence, Achievement Orientation, Intellectual-Cultural Orientation, Active Recreational Orientation and Moral-Religious Emphasis. The third dimension of System Maintenance involves assessments of Organization and Control measures. The reliability of the original FES ranged from Cronbach's alpha 0.61-0.78 for the ten subscales [4]. FES is practical to use both clinically and in research. It is a

multidimensional measure in the study of family systems with adequate test-retest reliability and evidence of validity and sensitivity to change.

Thus, the aims of the present study were to translate the Family Environment Scale into the Bahasa Malaysia language, evaluate its reliability using internal consistency and compare its measurement results with the original FES results[4]. However, our study focused on measuring the perception of Malaysian adolescents' on their family environment, whereas the original FES [4] measured the perception of different categories of the family members. In such cases, complex interactions may exist between the environment, measurement sensitivity and the level of the variable being measured.

Methods

The adolescents were selected from four different secondary schools. The schools were situated in Kuala Lumpur and were selected by the Ministry of Education. Within each school, the adolescents were randomly selected based on quota sampling. Quota sampling was done for ethnicities to represent the Malaysian population. The Malaysian population comprises multiracial ethnicities namely Malays, Chinese, Indians and other ethnic minorities. The academic performance was graded based on the teachers' assessment of the students' achievement. The inclusion criteria consisted of adolescents whose age ranged from 12-17 years old and who understood Bahasa Malaysia language. Those who have cognitive impairment such as mental retardation and difficulty in understanding Bahasa Malaysia were excluded from the study. Consent was obtained from the parents and adolescents prior to the study.

The study was divided into four phases, namely: Phase 1: Translation process; Phase 2: Pilot test; Phase 3: Internal consistency reliability test; Phase 4: Comparison of the study results with the original FES results [4].

Phase 1: The translation process of FES

The translation process was carried out by a group of experts consisting of linguists and medical personnel. The process of translation was carefully planned with the importance of ensuring the preservation of contents and the meanings. The aim was to evaluate clarity, comprehension, naturalness and adequacy of wording.

During this phase, two forward translations into Bahasa Malaysia language were done. This consisted of one translation conducted by medical personnel who was not blinded to the study and the other by a linguist who was blinded to the study [13] . Both of the translated versions were then back translated to English to assess the accuracy of the Bahasa Malaysia translations.

Then the two forward translations were reconciled and sentence-by-sentence revision was done to produce the first consensus of Bahasa Malaysia version. Translators were advised to report any difficulties encountered. A group of experts then compared the back-translation and forward translation and amendments were made accordingly.

Phase 2: Pilot test

The translated Bahasa Malaysia questionnaire and the original English questionnaire were tested on 8 respondents. The respondents were selected from a group of adolescents who were bilingual. The Bahasa Malaysia and English versions were

randomly administered to the respondents. Subsequently, this session was followed with a focus group discussion on the questionnaires that had been tested. This was to ensure word suitability and comprehension. The expert panels reviewed and came up with the final Bahasa Malaysia version of the FES.

Phase 3: Internal consistency reliability test.

Bahasa Malaysia version of the FES was tested for its internal consistency. Data collection was performed on a single occasion during a six-month period in 2007. A total of 295 participants were enrolled in this study. The Bahasa Malaysia version of the FES questionnaire was given to the participants. The time taken to complete the questionnaire was approximately 20 to 30 minutes.

Phase 4: Comparison of the study results with the original FES

Mean scores of the subscales of FES and the internal consistencies (Cronbach's alpha) were calculated. The results were then compared with the results of the original FES study on normal families [4].

Measures

FES type R was used in the present study. The scale is made up of 90 statements that are meant to evaluate the perceptions of the respondents regarding the present family environment. The respondent was supposed to assess each statement as "true" or "false" in relation to the environment in his or her family. Each response received a score of zero or one to indicate absence or presence of the item evaluated, respectively. If respondent's answer was the same with the FES answer scheme, one mark will be given and if not, zero mark will be given. The total

for each subscale was obtained by adding up the number of points on each subscale [14].

The statistical analyses were conducted using SPSS version 14.0. Descriptive analyses were done to determine the distribution of FES items and to calculate the mean score and standard deviation for FES subscales. Internal consistency was done to test for reliability using Cronbach's Alpha.

Results

Table 1 shows the demographic data of the participants in the study. Approximately 53% of them were girls and 47% were boys. Majority of the participants were Malays (63.1%), followed by Chinese (28.5%) and Indians (6.8%). The ethnic and gender distribution of the sample were approximately proportionate to the Malaysian population based on the Malaysian Statistics Department [15]. The mean age of the participants was 14.9 ± 1 years old. Most of them had moderate to fairly good academic performance. Approximately 40% of them came from families with family income of RM 1000 – RM 5000 and majority of them lived with both parents.

Table 2 shows a comparison between the mean scores of FES from the ten subscales for the sample studied and the scores from the original study done by Moos et al on normal families. Respondents in this study scored higher in achievement orientation, moral-religious emphasis, organisation and control subscales. Meanwhile they scored lower in expressiveness, independence, intellectual-cultural orientation and active-recreational orientation subscales.

Table 3 illustrates a comparison between the reliabilities (internal consistency) of the FES

Bahasa Malaysia version and the original FES study [4] done on normal families. The internal consistencies for this study ranged between Cronbach's alpha 0.10 – 0.70. All of the reliability results

generated were lower than those originally reported for this instrument. The best reliability rate attained was for cohesion (0.70). Five subscales in the Bahasa Malaysia version were found to be less than 0.5, which were below the acceptable level for practical or research use. Those subscales were Independence (0.10), Expressiveness (0.22), Achievement Orientation (0.24), Active Recreational Orientation (0.33) and Moral Religious Emphasis (0.45). Other subscales presented acceptable reliability rates (0.5 and above) such as Conflict (0.63), Organisation (0.58), Control (0.54) and Intellectual-Cultural Orientation (0.51).

Table 1: Socio-demographic data of the respondents

Socio-demographic variables	Number	%
Age (years)		
12-13	21	7.1
14-15	168	56.9
16-17	106	35.9
Gender		
Male	138	46.7
Female	157	53.3
Ethnic		
Malays	186	63.1
Chinese	84	28.5
Indians	20	6.8
Others	5	1.7
Academic performance		
Good	38	12.9
Fairly good	156	52.9
Moderate	68	23.1
Poor	33	11.1
Parents' Marital Status		
Married/living together	264	89.5
Divorced/separated	31	10.5
Family Income		
< RM 1000	69	23.4
RM 1001-5000	120	40.7
> RM 5000	30	10.2
Don't know	76	25.8
Mother's educational level		
Primary school	20	6.8
Secondary school	120	40.7
Tertiary education	54	18.3
Don't know	101	34.2
Father's educational level		
Primary school	19	6.4
Secondary school	97	32.9
Tertiary education	71	24.1
Don't know	108	36.6

Table 2: Comparison of mean scores of the sub-scales of FES between samples in this study and samples from a study on normal families by Moos et al

Dimensions	Sub-scales	Malaysian (N = 295)		Study by Moos et al (N=1432)	
		Mean	**SD**	**Mean**	**SD**
Relationship Dimensions	**Cohesion**	6.93	2.02	6.73	1.47
	The degree of commitment, help and support family members provide for one another				
	Expressiveness	4.63	1.56	5.54	1.61
	The extent to which family members are encouraged to express their feelings directly				
	Conflict	3.04	2.09	3.18	1.91
	The amount of openly expressed anger and conflict among family members				
Personal Growth Dimensions	**Independence**	4.82	1.44	6.66	1.26
	The extent to which family members are assertive, are self-sufficient and make their own decisions				
	Achievement orientation	6.95	1.31	5.47	1.62
	How much activities are cast into an achievement-oriented or competitive framework				
	Intellectual-cultural orientation	4.65	1.87	5.56	1.82
	The level of interest in political, intellectual and cultural activities				
	Active-recreational orientation	4.97	1.58	5.33	1.96
	The amount of participation in social and recreational activities				
	Moral-religious emphasis	6.16	1.50	4.75	2.03
	The emphasis on ethical and religious issues and values				
System Maintenance Dimensions	**Organization**	6.67	1.78	5.47	1.90
	The degree of importance of clear organization and structure planning				
	Control	5.11	1.91	4.26	1.84
	How much set rules and procedures are used to run family life				

Table 3: Comparison of internal consistencies (Cronbach's alpha) between Bahasa Malaysia version and original English version of FES.

Subscales	Bahasa Malaysia version of FES		FES in English language (Moos et al)	
	Cronbach's alpha	Corrected Average Item-Subscale Correlations	Cronbach's alpha	Corrected Average Item-Subscale Correlations
Cohesion	0.70	0.39	0.78	0.44
Expressiveness	0.22	0.08	0.69	0.34
Conflict	0.63	0.31	0.75	0.43
Independence	0.10	0.03	0.61	0.27
Achievement orientation	0.24	0.10	0.64	0.32
Intellectual-cultural orientation	0.51	0.23	0.78	0.44
Active-recreational orientation	0.33	0.13	0.67	0.33
Moral-religious emphasis	0.45	0.20	0.78	0.43
Organization	0.58	0.28	0.76	0.42
Control	0.54	0.25	0.67	0.34

Discussion

The present study is the first attempt to translate the FES into the Bahasa Malaysia language. In particular, this study focused on measuring the perception of Malaysian adolescents of their family environment. FES is an effective instrument to differentiate between functional families and families with problems [16,17,18,19]. Developing a culturally equivalent translated instrument requires familiarity with basic problems of linguistic adaptation, cultural construct and psychometric changes inherent in the translation process [7,20]. Thus, the cross-cultural adaptation and validation of the Bahasa Malaysia version of FES is important to assess the families in Malaysia.

Comparing between the respondents' subscale mean scores with the findings in the original FES study by Rudolf Moos (using normal population), some variations were found. The mean scores for the two different samples were only similar in two subscales namely "cohesion" and "conflict". This study population scored less in "expressiveness", "independence", "intellectual-cultural activities" and "active-recreational activities". However, their scores were higher in "achievement orientation", "moral-religious emphasis", "organisation" and "control". The findings showed that the study population in both studies was different in many areas. The variations could be due to the differences in the social cultural behaviour [17,18,20] whereby in our local context, the family

environment encourages achievements and adheres more to moral-religious values.

The sample population in this study also indicated that the local adolescents were less expressive and independent. The Malaysian society is strongly influenced by a hierarchical structure headed by an authoritarian father figure. This could lead to a relatively repressive social environment which contributes to less expressive and independent adolescents [11,17]. The hierarchical family structure may also explain the higher scores observed in organisation and control subscales. With regard to the intellectual-cultural and active-recreational activities subscales, the sample studied scored less compared to the American sample. The latter, perhaps, have better access to a larger number of options, opportunities and cultural activities [20].

In determining the reliability of the instrument, internal consistency was evaluated. In this study, the Cronbach's alpha for five subscales namely; "cohesion", "conflict", "organisation", "control" and "intellectual-cultural" were acceptable (Cronbach's alpha>0.5) [21,22]. The other five subscales had Cronbach's alpha less than 0.5 hence unacceptable for practical or research use. Previous studies have also found that the reliabilities of some subscales in their studies were lower [23] in comparison to those initially reported of the original FES. The differences in the internal consistencies observed between the two sample populations might be due to cultural factors [20]. There is a difference in the lifestyle between Western and Malaysian setting with regards to family environment. Some of the questions used on the subscales with low internal consistency may be inappropriate for the Malaysian culture. Hence, these questions should be rephrased or replaced by other questions which describe similar concepts to adapt to the local context.

For example, the low Cronbach's alpha for the subscale "Expressiveness" could be explained by the difference the way the Malaysian adolescents express themselves compared to the Western population. Majority of the Malaysian adolescents reported that "family members do not often keep feelings to themselves" however they also reported that "they are usually careful about what they say to each other". The latter statement contradicts the former. Being "careful about what we say to each other" is a normal practice in the Malaysian culture and perhaps does not represent expressiveness. The Malaysian adolescents perhaps have different concept of expressiveness, thus the items selected to represent the subscale "Expressiveness" should be re-evaluated to adapt to the local culture.

With regard to the subscale 'Independence', the internal consistency was very low, Cronbach alpha 0.10. Perhaps the concept of independence among Malaysian adolescents differs from that of Western countries. For example in Malaysia, where the family environment is strongly influenced by a hierarchical family structure, it is the norm for adolescents to ask permission from their parents before leaving the house thus, the item 'In our family, we have the freedom of movement' might not reflect independence. It is also not the normal practice for family members to strongly encourage one another to stand up for their rights or to speak out. The Malaysian adolescents might have difficulties in answering these items which describe 'Independence'.

For active-recreational orientation, the item 'our friends often come over to our house for dinner' might be inappropriate for the

Malaysian adolescents as it is culturally uncommon for adolescents to have friends over for dinner. The item 'sometimes family members attend courses or classes to acquire knowledge on new hobbies or interests (outside school) might also be inappropriate since there are not many courses or classes available for such interests in Malaysia. Thus, the items selected to represent these subscales should be re-evaluated to adapt to the local culture. Similarly, other subscales with low Cronbach's alpha values should be re-examined too.

One of the limitations of this study was the homogeneity of the sample. Although the participants were recruited from four different secondary schools, majority of the participants were from a middle class socio economic background, lived with both parents and had fairly good academic performance. Besides that, in this self reported study, the participants might have provided evasive or false responses if they did not feel comfortable answering a question truthfully. Another limitation was that we were not able to compare the findings in this study with the results of a previous FES study using only adolescents by Moos et al.

In conclusion, the Bahasa Malaysia version of FES requires further culturally appropriate revision. To improve the results, a repeat study should include: (i) rephrasing or changing the items in the subscales to be more suitable for the Malaysian context, (ii) a larger sample size, (iii) adequate variability of the participants and (iv) involvement of different members of the family. A new measuring scale could also be devised to provide an accurate evaluation of the family environment as perceived by Malaysian adolescents, which has acceptable levels of reliability and validity and is applicable to Malaysian adolescents with a wide range of behavioural problems.

Acknowledgment

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ORIGINAL ARTICLE

IMPACT OF MEDICAL STUDENT WELL-BEING WORKSHOP ON THE MEDICAL STUDENTS' STRESS LEVEL: A PRELIMINARY STUDY

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Abstract

Objective: **Medical training has always been regarded as a highly stressful environment to students. This article described a preliminary data on impact of a stress-management programme on medical students' stress level.** *Methods:* **This is a quasi-experimental before after comparison study design. The programme was run over half-day and convenient sampling method was applied. Sample size as calculated for this preliminary study was 38. The 12 items General Health Questionnaire (GHQ-12) was administered prior to the programme and four months later. Data was analysed using SPSS version 12.** *Results:* **34 participants were involved in this study. This study found that there was a significant difference in participants' GHQ-12 scores before and after the programme (p<0.001). It also found that the percentage of distressed participants to have significantly reduced after they went through the programme (p<0.05).** *Conclusion:* **This study showed that the programme is a promising stress-management programme with the evidence of positive impact on the medical students' mental health by improving and reducing their stress level. Apart from that it is a well accepted programme by the medical students. Perhaps similar approach can be considered relevant to be incorporated in other set up.** *ASEAN Journal of Psychiatry, Vol.11 (1): Jan – June 2010: 56-63.*

Keywords: **Medical students, stressors, stress, mental health, stress management**

Introduction

Tertiary education environment has always been regarded as highly stressful to students. Medical training further adds to the already stressful environment. The stressors of medical training and associated negative consequences to the mental and physical health of medical students have been described in many studies [1-10]. Several medical education constituencies have emphasized the importance of teaching stress management and self-care skills to medical students [11-12]. Accreditation standards for The Malaysian Qualification Agency (MQA) requires that each school must have programs that promote the well-being of students and facilitate their

adjustment to the emotional, spiritual, mental and physical demands of medical school [13] . A recent literature review discovered that, although more than 600 articles addressed the importance of stress management programs in medical curricula, only 24 reported intervention programs with accompanying data [14]. Although there is large literature on stress management in general, their specific application to medical education has been largely unexplored [14]. To fill this gap, we described in this article on the preliminary findings of the impact of a stress-management program known as the 'Medical Student Well-Being Workshop' in our medical school on medical students' stress level.

The purpose of this small scale pilot study was to gather initial data on possible impact of the workshop as well as acceptance of the medical students towards the workshop.

Methodology

Study design and sample size

A quasi-experimental before after comparison study design was applied in this preliminary study. Sample size was determined based on the Roscoe rules of thumb which recommended that 30 subjects were adequate for a preliminary study [15]. The study sample size calculated after taking 20 percent drop out rate into consideration was 38 subjects. Convenient sampling method was applied in selecting study subject.

Description of the workshop

The workshop was run by staff from the Medical Education Department over half-

day (four hours). Prior to the workshop, investigators announced the workshop to medical students and participation was voluntary. It was open to students from all years of the medical course. The workshop objectives were to enable students to measure their stress levels by GHQ-12 [17-20], to recognize main stressors they are facing by Medical Student Stressor Questionnaire (MSSQ) [21] and to identify their main coping styles by Brief COPE questionnaire [22]. Participants were given some input regarding the problems related to stress in medical study as well as in the medical career, the relationship between stress level, stressors and coping methods. A discussion session was held to explore each topic further and to share experiences between participants.

Data collection

The GHQ-12 was used to measure participants' stress level. The questionnaire was semi-structured and self-administered. It was administered to the students during face to face sessions in a hall prior to the workshop and after four months later. All data collection was done by investigators. The students were told to follow the instructions. The process to fill in the questionnaire took about 15 minutes to finish and they were to be returned on the same day.

The GHQ-12 is a well-validated instrument used to measure overall emotional wellbeing and commonly used in studies looking into distress in populations [16-20]. Its use in the local medical student population has also been validated [16]. It is one of the most widely used measurement tool to measure

stress level. Reliability coefficients of the questionnaire have ranged from 0.78 to 0.95 in various studies. The items of GHQ-12 represent 12 manifestations of stress and respondents were asked to rate the presence of each of the manifestations in themselves during recent weeks. This is done by choosing from four responses, typically being 'not at all', 'no more than usual', 'rather more than usual' and 'much more than usual'. The scoring method is a binary scoring method where the two least symptomatic answers score 0 and the two most symptomatic answers score 1 – i.e. 0-0-1-1. The GHQ-12 scores range from 0 to 12. Caseness was considered as a score of 4 or more (23-24). The sensitivity and specificity of the GHQ-12 score at cut-off point of 4 were 81.3% and 75.3% respectively with positive predictive value of 62.9% (16, 23-24). Participants who scored GHQ-12 equal to 4 and above were considered as having significant distress and taken as 'case' in this study.

At the end of the workshop, evaluation questionnaire were distributed to participants. The evaluation questionnaire solicited participants' ratings regarding the usefulness (1=not useful to 5=highly useful) of the introductory session, the three questionnaires, the discussion sessions, the facilitators and its overall usefulness. Participants were also asked to rate the success (1 = not successful to 5 = very

successful) of the workshop in achieving the objectives.

Verbal consent was obtained from the participants. Clearance was obtained from the school prior to the start of the study. Each data collection form was given ID.

Statistical analysis

The collected data was analysed using Statistical Package for Social Sciences (SPSS) version 12. Data were entered, checked for data entry errors, explored and cleaned. The investigators used alpha (α) at 0.05 and confidence interval of 95%. Descriptive statistics was applied for analysis of the demographic data and the percentage of distressed students was determined based on GHQ-12 score. Assumptions were made before running statistical tests. McNemar and Wilcoxon Signed Rank test were applied to determine significant difference between percentage of distressed participants and their GHQ score before and after the workshop.

Results

A total of 34 participants were involved in this study, out of whom 30 (88.2%) were female. 20 students (58.8%) from years two and three, 12 (35.3%) from year four and 2 (5.9%) from year five. Majority of participants were Malays, 32 (94.1%), and the rest was Chinese (Table 1).

Table 1: Summary of participants' profile.

Variables	Workshop participants responded to follow up session, n (%)
Year of study	
2	13 (38.2)
3	7 (20.6)
4	12 (35.3)
5	2 (5.9)
Total	34 (100.0)
Gender	
Male	4 (11.8)
Female	30 (88.2)
Total	34 (100.0)
Races	
Malay	32 (94.1)
Chinese	2 (5.9)
Total	34 (100.0)

Figure 1: Comparison of percentage of distressed participants (a) before and (b) after 4 months of workshop.
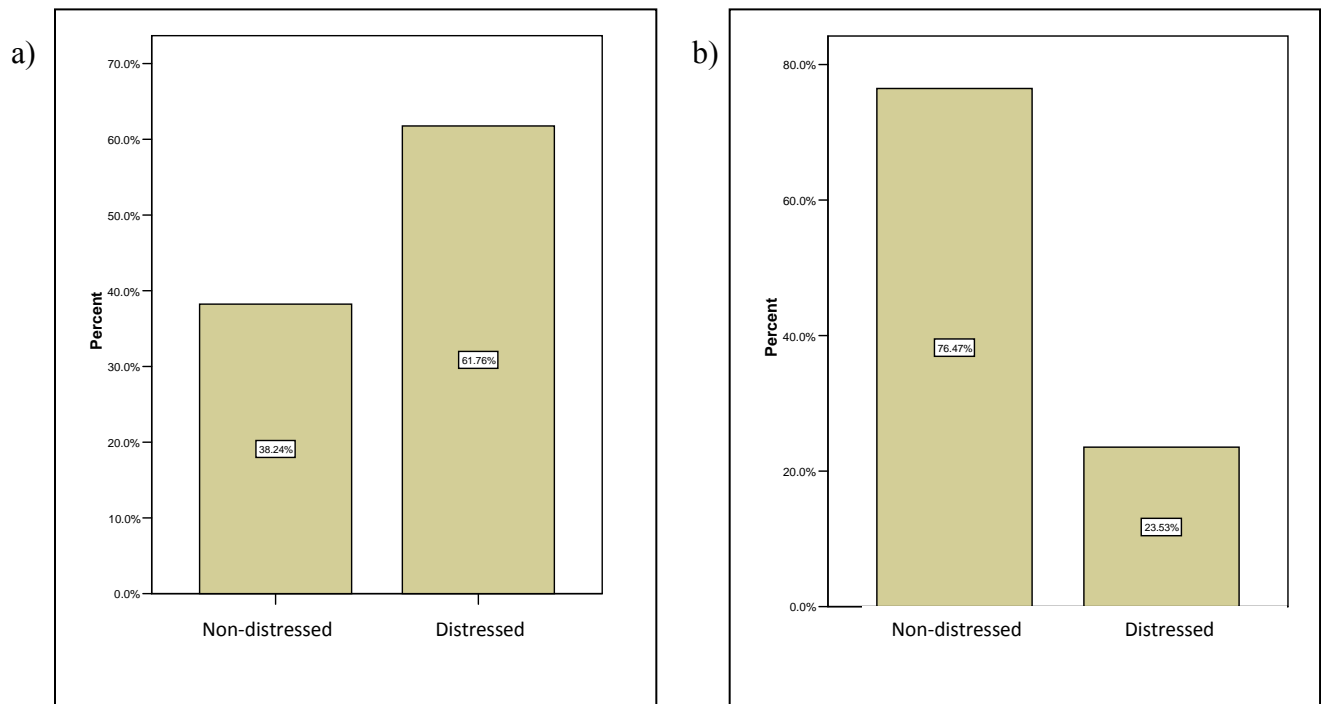
p-value = 0.002*;

(*McNemar test, p-value of < 0.05 was considered as significance at 95% CI).

Figure 1 showed that there was significant reduction in percentage of distressed participants after four months of the workshop ($p < 0.05$). This is an evidence of its positive impact in improving the participants' stress condition.

Table 2: Comparison of participants' GHQ scores before and after the workshop.

Variables	GHQ-12 score Median (IQR)	Z-statistic	*p*-value
Before workshop	4.0 (4.0)	-3.776	< 0.001*
After workshop	1.5 (3.0)		

*Wilcoxon Signed Rank test, p-value of < 0.05 is considered as significance at 95% CI.

Table 2 showed that there was significant reduction in participants' GHQ scores four months after the workshop ($p < 0.001$). This finding is an evidence of positive impact of the workshop in reducing the participants' stress level.

Table 3: Summary of workshop evaluation findings.

Items	*Mean	Standard Deviation
Introduction session**	3.73	0.87
GHQ-12**	4.51	0.69
MSSQ**	4.60	0.63
Brief COPE Inventory**	4.69	0.57
Attainment of workshop objectives***	4.13	0.65
Overall usefulness**	4.30	0.65

*Maximum mean score was 5; **1 = not useful, 5 = highly useful; ***1 = not successful, 5 = very successful*

The participants' perceptions of the usefulness of the workshop sessions as well as the achievement of objectives are given in Table 3. All sessions were rated as highly useful. Among the comments written in the open-ended section regarding the most important thing participants learnt from the workshop, 40% wrote comments related to improved self-awareness. The importance of positive coping skills was commented by 27.5% of them. The fact that stress is related to one's perception was mentioned as most

important by 17.5% and another 15% appreciated the usefulness of increased knowledge such as identification of stressors. These findings were evidence of the programme being well accepted by the medical students.

Discussion

The sample size in this pilot study was relatively small and not representing the actual distribution of the study population in term of gender, ethnic groups, years of study and religion. Therefore, the findings should be interpreted cautiously. Apart from that, this pilot study has provided a useful data in order to calculate appropriate sample size for the future study.

Considering the well-researched fact that medical study is highly stressful [1-10], the positive impact of the programme to the students' stress level can be understood. It was also reflected that the programme is a promising intervention programme with evidence of positive impact in improving and reducing medical students' stress level. In the year 2000, Shapiro et al [14] mentioned that so far there is no proven intervention program that can significantly reduce stress levels among medical students. From that notion, it is noteworthy that this study has provided some evidence to suggest positive impact of such intervention on the medical students' mental health. However, it should be remembered that this was a voluntary programme so the participants were motivated to attend and the positive impact of the program should be interpreted with caution and further research with better study design should be carried out in the future to confirm this finding. Eventhough

there is large literature on stress management in general; their specific application to medical education has been largely unexplored [14]. Therefore, it is difficult to make comparison of findings in present study with other studies.

The activities of the workshop were based on the premise that 'knowledge is power'. The use of screening instruments and providing students with the relevant knowledge about stress seemed to be an effective strategy. Discussions on coping styles seemed to be very highly appreciated by students. The effectiveness of this approach is reflected in the high ratings given during the questionnaire-filling sessions. A participant wrote:

"I have learnt how to recognize the stressor that I have and how to cope positively with it."

These are content areas that can be introduced to students at strategic time and places in the curriculum.

This study provided a short-term impact of such programme on the medical students' stress level. The actual long-term impact of it still remains to be seen. This could be confirmed through follow-up and prospective studies. Apart from that, more data is needed to ensure that the problem of stress in this medical school is addressed in an efficient and holistic manner [14].

In conclusion, this study showed that our programme is a promising stress-management programme with the evidence of positive impact on the medical students' mental health in the form of improvement

and reduction their stress level. Apart from that it is a well accepted programme by the medical students. Perhaps similar approach can be considered relevant to be incorporated in other medical schools.

Acknowledgements

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ORIGINAL ARTICLE

SEXUAL FUNCTION OF MALAY WOMEN
WITH TYPE 2 DIABETES MELLITUS: A PRELIMINARY STUDY

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Abstract

Objective: **Female sexual dysfunction is a known complication of diabetes
mellitus. The aims of this study is to estimate the prevalence of sexual
dysfunction and the types of sexual dysfunction experienced by Malay
women with type 2 diabetes mellitus.** *Methods***: Cross sectional study was
conducted on married Malay women with type 2 diabetes mellitus, receiving
treatment from two community clinics in Selangor, Malaysia. Female sexual
function was assessed using Malay version of Female Sexual Function Index.**
Results: **This study found that sexual dysfunction was present among 18.2%
women. Lack of libido was the commonest symptom among these women and
was observed in 40.9% of women followed by sexual dissatisfaction (36.4%).
Sexual arousal disorder was observed in 22.7%, 18.2% complained of lack of
lubrication, and 22.7% had vaginal discomfort. Orgasmic dysfunction was
found in only 4.5% of these women.** *Conclusion:* **This preliminary research
showed sexual desire disorder was the commonest type of sexual disorder
among diabetic women.** *ASEAN Journal of Psychiatry, Vol. 11(1): Jan – June
2010: 64-71.*

Keywords: Female sexual function, Diabetes Mellitus, Malay women

Introduction

Sexual dysfunction in women is common
and may affect 30-70% of women leading to
personal distress [1]. In Malaysia, a study
found that about 29% of women may

experience one or more types of sexual
dysfunction [2]. Another research by Sidi
and colleague [3] found that most women in
Malaysia conformed to Basson's circular
model of female sexual response. These
interesting findings demand further

investigation on women's sexual wellbeing in Malaysia.

Diabetes mellitus (DM) is a known cause of female sexual dysfunction which occurs in 27 – 59.6 % of women with type 1 or type 2 DM [4, 5]. Vascular disease, neuropathy and psychosocial problems [6] among diabetics are known to cause sexual dysfunctions such as reduce sexual desire, poor lubrication, decrease sexual arousal, orgasmic disorder, sexual pain disorder and lack of sexual satisfaction [7]. Hormonal imbalance [8] and reduce somatic sensation among diabetics [9] were among few suggestion of factors leading to female sexual dysfunction.

Although, vast studies had been done on female sexual dysfunction (FSD) among diabetic women, there was yet any literature stating the prevalence of such disorder among Malaysian women. Therefore, the purpose of this study was to determine the prevalence of sexual dysfunctions and factors associated with sexual function among Muslim women with type 2 diabetes mellitus in Malaysia.

Methods

A cross sectional study was conducted in May 2009 at among married Muslim women, age 20-60 years, receiving on-going treatment and follow-up for type 2 DM at

the community health clinics at Bangi and Kajang, two small town in Selangor. Women diagnosed with chronic or terminal disease (with exception to hypertension), diagnosed and receiving treatment for psychiatric disorder, pregnant or 2 months post partum were excluded from the study. This study had received ethical approval from the Institute for Health Behavioural Research (IHBR).

Informed consent was obtained from each participant after detail explanation regarding the research was given by the researcher (the main author of this article). Participants were assured of privacy and confidentiality. Demographic data such as age, occupation, duration of marriage, duration of diabetes, number of children were obtained from participants. Glycemic status was determined by the level of HbA_{1c}.

Malay version of Female Sexual Function Index (MVFSFI) was used to determine presence of sexual disorder. Female Sexual Function Index (FSFI) is a 19-item questionnaire [10] consists of six domains of sexual function: desire, arousal, lubrication, orgasm, satisfaction and pain. MVFSFI was tested and found to be reliable and valid to be used among Malaysian community [11]. It has a different scoring system compared to original questionnaire by Rosen. (Table 1).

Table 1 : Scoring system for MVFSFI

Type of dysfunction	No. of items	Score
Global sexual dysfunction	19 (total)	≤ 55
Sexual desire disorder	2	≤ 5
Sexual arousal disorder	4	≤ 9
Disorder of lubrication	4	≤ 10
Orgasmic disorder	3	≤ 4
Sexual dissatisfaction	3	≤ 11
Sexual pain disorder	3	≤ 7

Presence of hypertension, other illness and medication prescribed were obtained from the patients' record. Participants' height, weight and waist circumference were also measured. Body mass index were calculated using participants' height and weight.

Analyses were performed using SPSS statistical software (Version 16.0; SPSS, Chicago). Spearman rank test was used to measure association between sexual disorder and other factors such as demographic factors, HbA_{1c} and BMI. Scores were presented as mean ± SD. The level of significance used was $p < 0.05$.

Results

Two hundred and thirty eight contact numbers of patients were obtained from the database. However, only 22 participated in the research. Half of the telephone numbers were not contactable (due to change in numbers and change of address). Of the contactable, majority of the women were not able to participate because of work, disapproval from their husband, inability to leave home to care for their children, no transportation and ill health. Some of the women who were interested were widows and for that reason, didn't fulfill the research criteria.

Table 2: Socio-demographic Characteristics of participants

	Characteristic	*N*	*%*	*Mean (SD)*
Age (yr)	20 – 30	1	4.5	
	31 – 40	4	18.2	45.6 (8.7)
	41 – 50	11	50	
	51 – 60	6	27.3	
Occupation	Employed	8	36.4	
	Self-employed	2	9.1	
	Housewife	11	50.0	
	Retired	1	4.5	
Duration of marriage	1 – 5	1	4.5	22.0 (9.0)
	6 – 10	1	4.5	
	11 – 15	2	9.1	
	> 15	15	68.2	
No. of children	1 – 4	16	80.0	
	>4	4	20.0	3 (1.7)
Menopause	Yes	5	22.7	
	No	7	77.3	
Duration of DM (yr)	< 4	8	36.4	
	5 – 10	11	50.0	6.9 (4.8)
	> 10	3	13.6	
Hypertension	No	13	59.1	
	Yes	9	40.9	
No. of medication	0	1	4.5	3 (1.5)
	1 – 3	13	59.1	
	4 – 6	8	36.4	

Body mass index	Underweight	0	0	
	Normal weight	5	22.7	29.0 (3.3)
	Overweight	8	36.4	
	Obese	9	40.9	
Glycemic control	Good (< 6.4)	4	19.0	
	Satisfactory (6.5 – 7.5)	1	4.8	9.5 (2.6)
	Poor (> 7.5)	16	76.2	

The mean age of participants were 45.6 ± 8.7 years (range of 25 – 60). Majority (50.0%) of these women were housewives with duration of marriage of 22.0 ± 9.0 (ranging from 5 – 42). Only 22.7% of these women were postmenopausal. Mean duration of diabetes mellitus is 6.9 ± 4.8 years and about 40.9% of these women, also had hypertension. 76.2% had poor glycemic control with mean A_{1c} level of 9.5 ± 2.6 %. Among these women, 36.4% were overweight and 40.9% were obese with mean BMI of 29.0 ± 3.3 kg/m^2 (Table 2).

Table 3 : Prevalence of dysfunction in diabetic women

Sexual Dysfunction	*N*	*%*	*Range*	*Mean score (SD)*
Global dysfunction (FSD)	4	18.2	4 – 89	62.8 (24.5)
Sexual desire disorder (SDD)	9	40.9	2 – 9	5.5 (1.8)
Sexual arousal disorder (SAD)	5	22.7	0 – 17	11.8 (4.1)
Disorder of lubrication (DOL)	4	18.2	0 – 20	13.6 (6.0)
Orgasmic disorder (OD)	1	4.5	0 – 16	10.6 (4.8)
Sexual dissatisfaction (SD)	8	36.4	2 – 15	11.2 (4.2)
Sexual pain disorder (SPD)	5	22.7	0 – 15	10.1 (5.1)

(SD= Standard deviation)

In this study (Table 3), we found that about 18.2% of women experience sexual dysfunction with mean score of 62.8 ± 24.5 (range from 4 – 89). The most common dysfunction suggested by this study was sexual desire disorder which occurred in 40.9% of women. Incidence of sexual arousal disorder was 22.7%; 18.2% experience poor lubrication; 22.7% had sexual pain and 36.4% was experiencing sexual dissatisfaction. Orgasmic disorder was the least issue experienced by these women (4.5%). Further analysis was conducted using Spearman's rank test to

determine correlation between sexual function score and associated factors such as socio-demographic, duration of diabetes, BMI and level of HbA$_{1c}$. Results are summarized in Table 4.

Table 4: Correlation between domains of sexual function and associated factors

	Sexual Function	*Desire*	*Arousal*	*Lubrication*	*Orgasm*	*Satisfaction*	*Sexual Pain*
Age	-0.49*	-0.45*	-0.51*	-0.52*	-0.58**	-0.24	-0.43*
Duration of marriage	-0.46	-0.40	-0.43	-0.45	0.57*	-0.12	-0.35
Number of children	-0.04	-0.03	-0.04	-0.03	-0.14	0.52	0.12
Duration of diabetes	-0.43*	-0.36	-0.19	-0.48*	0.52*	-0.30	-0.36
No. of medication	-0.45*	-0.37	-0.33	-0.47*	-0.51*	-0.27	-0.43*
BMI	0.01	0.01	-0.03	0.09	0.92	-0.27	-0.23
HbA$_{1c}$ level	-0.40	-0.40	-0.35	0.48*	-0.39	-0.44*	0.36

(BMI= Body Mass Index, HbA$_{1c}$ = Glycated Haemoglobin; ** $p < 0.01$, * $p < 0.05$)

This study suggests that increase in age as a significant factor moderately associated with decrease of sexual function in all domains except for sexual satisfaction. Increase level of HbA1c in the blood was a significant factor that moderate correlated with reduce sexual satisfaction but not in other sexual domains. On the other hand, BMI and number of children were not significantly correlated with all domains of sexual function.

Increase numbers of medication were found to have a moderate association with reduction of function in lubrication, orgasm and sexual pain. In addition, duration of diabetes also was moderately correlated with lubrication and orgasmic disorder but not sexual pain. Duration of marriage was found to be significantly associated with decrease of orgasmic function.

Discussion

Previous studies have shown prevalence of sexual dysfunction ranging from 20% - 60%. In this study, prevalence of sexual dysfunction is only found in 18.2%, which is lower compared to previous studies. This is probably due to the small number of respondent participating in this research. Erol et al. (2002) found that 51.3% of diabetic women had one or more types of sexual dysfunction. Nevertheless, similar to this study, Erol et al. (2002) and Ali et al (2008) found that lack of libido is the commonest type of dysfunction among diabetic women.

Sexual desire disorder is defined by DSM IV as persistently or recurrently deficient (or absent) sexual fantasies and desire for sexual activity leading to personal distress or interpersonal difficulty. According to Sidi

and colleague (2008), majority Malaysia women endorse the Basson's circular model of sexual response. Basson argues that sexual desire is greatly influenced by external stimuli which subsequently influences the flow of sexual response in women [12]. Basson redefines hypoactive sexual desire disorder as persistent or recurrent deficiency (or absence) of sexual fantasies, thoughts, desire for sexual activity (alone or with partner), and inability to respond to sexual cues that would be expected to trigger responsive sexual desire. These symptoms need to cause personal distress in order to be defined as sexual desire disorder. Level of personal distress among participants who experience poor libido is not measured in this study. One may query whether participants who experienced poor sexual drive were due to absent of external stimuli or other factors that influenced marital relationship.

Among this small number of participants, only one respondent experienced orgasmic disorder. This unexpected discovery supports study by Sidi and colleagues (2008) which found that orgasmic disorder occurs lowest among Malay women in comparison to women from other ethnic background. Furthermore, similar to study by Sidi et al, this study also shows that duration of marriage influences women's sexual orgasm [13]. For that reason, we would like to suggest that orgasm may not be related to physiological changes in the body alone but may also be associated with psychosocial factors. Clearly more studies should be conducted to find out factors influencing female sexual orgasm.

In determining factors associated with reduce of sexual function, this study found that aging as a factor associated with reduce of function in all sexual domain except for sexual dissatisfaction [14]. Aging changes

the physiological and psychological wellbeing of women. As women aged, they will undergo menopausal stage which is a whole new life for most women. Physically women will experience physiological changes such as hot flushes, vaginal dryness and night sweats, which may disrupt sexual relationships. Reduce elasticity of vaginal wall and painful uterine contraction lead to refusal to engage in sexual activity which eventually precipitates problems in relationship. Aging can also give a negative effect toward the psychological wellbeing of women. They feel sexually unattractive, have low self-esteem and may experience emotional instability.

Like many other previous study, this study found that HbA_{1c} level is not associated with diabetic women's sexual function [4, 15, 16]. The association between glycemic control and sexual function is still unknown.

There are many limitations to our study. Firstly, this study was a preliminary study representing a small group of diabetic women. Topic on sexual health is still a taboo in Malaysia and this may contribute to poor response from the community. Additionally, control group was unavailable as a comparison. Many other factors were not considered in this study such as frequency of sexual activity and health status and sexual function of spouse. Respondents' psychological status we not included in this current study. Psychosexual problem is a known main factor associated with sexual dysfunction in diabetic women [17, 18].

Conclusion

In conclusion, sexual desire disorder was the most common sexual dysfunction experienced by diabetic women and orgasmic disorder was the least common

complaint. Increase in age was found to be significantly associated with reduce of sexual function in women and therefore, may represent as a profound confounding factor in study on sexual problem in diabetic women.

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ORIGINAL ARTICLE

SCHIZOPHRENIA, SUBSTANCE USE AND AGGRESSIONS: WHAT ARE THE RELATIONSHIPS?

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Abstract

Objectives: The objective of the study is to determine the prevalence of substance abuse for alcohol, cannabis, opiates, stimulants, solvent and other substances among patients with schizophrenia in Hospital Bahagia Ulu Kinta (HBUK), Perak , Central Peninsular of Malaysia. This study also aims to determine the association of substance abuse with aggression, the demographic characteristics and total duration of hospitalization. *Methods*: This was a retrospective cross-sectional study whereby the first 194 subjects diagnosed to have schizophrenia based on International Classification of Disease, 10th edition (ICD-10) criteria were taken from data registry of patients admitted to HBUK from January until February 2004. The subjects' medical files were examined for documentation of substances abuse, aggression and accumulative duration of hospitalization. *Results*: The results showed the prevalence of substances misuse among patients with schizophrenia in general (including alcohol) was 24.7%. Cannabis 16.7%, alcohol 13.4%, opiates(heroin) 6.7%, Amphetamine type stimulants (amphetamine, metamphetamine, ecstacy) 5.7%, and other substances (benzodiazepine, solvents) 1.5%. *Conclusion:* There is higher prevalence of substance misuse in patients with schizophrenia as compared to general population. Male patients with history of substance misuse are more likely to have aggression than female. This group needs special precaution and probably in need of specialist help. *ASEAN Journal of Psychiatry, Vol. 11(1): 72-78.*

Keywords: Schizophrenia, Aggression, Substance use

Introduction

The prevalence of substance abuse or dependence differs by demographic and psychosocial factors and also depends on the presence or absence of any medical and/or psychiatric co morbidity. According to Epidemiological Catchment Area (ECA) study, the prevalence of schizophrenia is approximately 1 to 2% of the general population [1]. However, substance abuse among patients with schizophrenia is believed to be higher than general population. The life time prevalence of substance use among schizophrenia was as high as 50% [1]. In the ECA study, the primary drugs of abuse were alcohol (37%), cannabis (23%), and stimulants (13%). These rates are significantly higher than the general population rate of 13.5% for lifetime alcohol problem and 6.1% for drug misuse. The odd of having a substance abuse diagnosis is 4.6 times higher among patients with schizophrenia as compared to the general population [1].

It is important to understand how substance-use disorders affect outcomes in this already impaired population. Recent studies showed that substance-use disorders occur most commonly in males, and are most prevalent in the young population [2-8]. Substance-use disorders are associated with adverse outcomes, including medication non-compliance, rehospitalization, homelessness, contact with the criminal justice system, medical morbidity and suicide, and these negative outcomes seem to be more likely among those patients who utilize multiple drugs rather than alcohol alone [2-8]. Impulsivity and aggression were higher in the group with substance abuse than in the group without substance abuse [9].

Methods

We conducted this study in Hospital Bahagia, Ulu Kinta , Ipoh in August 2004. Hospital Bahagia is the largest and the earliest psychiatric institution in Malaysia. It is situated in the middle part of Peninsular Malaysia. It received patients from northern, western and eastern coast of Peninsular Malaysia. This hospital manages inpatient psychiatric clients as well as outpatient cases and in the community. For the purpose of this study, we choose only inpatient cases admitted between January 2004 and February 2004. We selected samples from the data registry of patients admitted in Hospital Bahagia between January 2004 and February 2004.

The first 194 patients with a clinical consensus ICD-10 diagnosis of schizophrenia were included in the study (universal sampling) whereas those diagnosed as having schizophreniform disorder, substance induced psychosis and schizoaffective disorder were excluded from the study. The subjects' case notes were retreived and examined for the documentation of substance use for alcohol, cannabis, opiates (heroine/ morphine/ codeine), stimulants (amphetamine/met-amphetamine), ecstasy, solvent and other substances (benzodiazepine).

The demographic profiles, the evidence of aggression, urine drugs status (cannabis and opiates) and the duration of hospital stays (latest admission only) were also determined from the case note. All the patients' records were examined by only one investigator within 2 weeks duration. The data was recorded and analysed at the end of the study using epi info statistical analysis. The patients with schizophrenia with co-morbid

substance abuse and without substance abuse are compared in terms of their correlation with bio demographic profiles, aggression and duration of hospital stays. The comparison between the two groups was analysed using chi-squared test together with calculation of odds ratios and confidence intervals. Significant differences at the 5% level are determined. The study was done by the approval of the director of the hospital. We used epi info version 3.2.2 for the analyses of data.

Results

The lifetime prevalence of substances misuse in general (including alcohol) was 24.7%. The lifetime prevalence for each specific substance showed that the highest prevalence for Cannabis was 16.7%, followed by alcohol (13.4%), opiates [heroin] (6.7%), Amphetamine Type Stimulants [ATS or amphetamine, metamphetamine, ecstacy] (5.7%), and other substances [solvents and benzodiazepines] (1.5%).

The comparison between patients with schizophrenia co-morbid with substance use and without co morbid substance use in term of social and demographic data are given in Table 1. Their correlations were examined by statistical methods using student t-test for continuous data and chi-square test for categorical data at 95% confidence interval (CI).

Table 1: Characteristics of patients with schizophrenia and their association with substance use.

Independent variables	Schizophrenia with substance use(N=48)		Schizophrenia without substance use (N=146)		Crude OR	(95% C.I.)
	No.	(%)	No.	(%)		
Gender*						
Male	46	(95.8)	86	(58.9)	15.5	(3.6 - 66.4)
Female	2	(4.2)	60	(41.1)		
Ethnic group						
Chinese	10	(20.8)	46	(31.0)	1.0	
Malay	28	(58.3)	80	(54.3)	1.6	(0.72 - 3.62)
Indian	9	(18.8)	16	(11.0)	2.2	(0.73 - 6.40)
Others	1	(2.1)	4	(2.7)	1.2	(0.12 -11.42)
Education status						
Primary	12	(25.0)	53	(54.8)	1.0	
Secondary	34	(70.8)	88	(60.3)	1.9	(0.89-4.05)
Tertiary	2	(4.2)	5	(3.4)	2.0	(0.34-11.45)
Marital status						
Divorced/ Widowed	90	(68.7)	114	(70.4)	1.0	
Married	3	(2.3)	6	(3.7)	0.4	(0.80-1.90)
Single	34	(26.0)	37	(22.8)	1.0	(0.26-4.10)

Evidence of aggression*						
Yes	39	(81.3)	85	(58.2)	3.00	(3.62-66.42)
No	9	(18.7)	61	(41.8)		
Employment status						
Employed	9	(18.8)	22	(15.1)		
Unemployed	39	(81.2)	124	(84.9)		
Age average (years)**	33.1		39.1		t test=0.93 (0.90-0.97)	
Duration of hospital stays(Months)	2.6		2.3		t test =1.02, p=0.31	

(**OR** = Odds Ratio, **CI** = Confidence Interval; *P<0.05, **P<0.01, *** P<0.001)
*P<0.05, **P<0.01, *** P<0.001

It was found that younger and male patients with schizophrenia were associated with substance use. Males were 15 times more likely to have history of any substance misuse as compared to female, Odds ratio=15.52, 95% confidence interval(3.62-66.42), p<0.001. However, there were no significant difference associations in between this 2 group in term of marital status, education level and employment. However, higher proportion of patient involved in substance use clearly seen in single or separated/divorcee.

We conducted multiple logistic regressions on every significant variable listed and found the significant logistic regression for each variable as shows in table 2.

Table 2: Multiple logistic regressions for significant independent variables from Table 1

Variables	Adjusted Odds Ratio	95% Confidence interval(CI)	Probability
Gender Male vs. female	13.76	3.119-59.084	P<0.001***
Age [group(years)] Younger vs. Elder group	0.941	0.91-0.98	P=0.002**
Evidence of aggression Substance use vs. no substance use	2.54	1.07-5.99	P=0.034*

*P<0.05, **P<0.01, *** P<0.001

In term of aggression, subjects with substance misuse were 3 times more likely to present with aggressive behavior, Odds ratio= 3.00, 95% Confidence Interval (93.62-66.42) and *P*=0.002 . Multiple logistic regression also showed significant correlation with history of substance use as shown in Table 2.

There was no significant difference of mean duration of hospitalization between the group with history of substance misuse and the group without substance.

Discussion

Existing research points to a high prevalence of substance abuse among patients with severe mental illness [1] which negatively affects prognosis and outcome. The prevalence of substance use among patients admitted in HBUK was noted to be lower than Epidemiological Catchment Area (ECA) prevalence study (24.7% vs. 47%). We expected an increasing prevalence of substance use after 10 years of ECA report. The most common substance use was cannabis followed by alcohol, opiates, stimulant, ecstacy, solvent and other substances eg. Benzodiazepines. Alcohol was not a major substance abuse as reported by ECA study. It seems that different demographic area have different pattern of substance abuse. The probable explanation for unexpected lower prevalence of substance use in this study include different setting or places eg. inpatient vs. outpatient and methodological issues.

This study is solely based on information gathered from case notes whereby the history taking done by various doctors led to unstandardized data and sometimes under reporting. Those patients without history of substance abuse were consider as non substance group. Exclusion of drug induced

psychosis and schizophreniform disorder could also reduce the true prevalence of substance use in patients with schizophrenia as psychiatrists tend to label the two earlier diagnoses in patients first presented with psychosis. Those patients with less prominent psychotic symptoms probably were not brought to hospital and treated in community or even in drug rehabilitation centre. However, if compared to the general population, our prevalence of substance use among patients with schizophrenia were higher (24.7 vs. 6.1%).

There was higher prevalence of substance use in schizophrenic patients as compared to general population. Several theories postulated include "self-medication hypothesis." [9-11]. Based on this idea, one would expect that patients chose specific drugs based on their symptoms-for example, those experiencing high anxiety may preferentially use alcohol and anti-anxiety pills, whereas those who are depressed might choose stimulants like cocaine or methamphetamine. Unfortunately, this premise did not hold up to systematic investigations. In fact, patients with schizophrenia, despite their anxiety and psychosis, have been reported to be more likely to use drugs like psycho stimulants, even though this can exacerbate their psychotic and anxiety symptoms. Thus, it is difficult to explain the higher rates of substance abuse by patients with schizophrenia using only the self-medication hypothesis. Second, they might be trying to relieve uncomfortable antipsychotic-induced side effects. Thirdly, drug use might facilitate entry into drug abusing peer groups, albeit at substantial personal costs. Fourth, as in the general population, high levels of impulsivity and sensation seeking are associated with substance abuse in patients with schizophrenia. Fifth, for many patients, availability seems to be the key

issue. For example, between 1983 and 1986, cannabis was the most popular drug among patients with schizophrenia. However, in 1990, cocaine became the most commonly used illicit drug, a change in pattern that was similar to that seen in the general population [12]. Finally, continued use may simply be due to the reinforcing effects of the addictive substance, which may be just as powerful, or even more so, in individuals with schizophrenia as in the general population.

Demographic characteristic of the schizophrenic patients such as young, male gender, aggressive and impulsive were more likely to be involved with substance abuse. As in the general population, high levels of impulsivity and sensation seeking are associated with substance abuse in patients with schizophrenia. Other demographic data e.g. marital status, education level, race, employment and duration for hospitalization did not show statistical significant correlations.

Clinical implications

There was higher prevalence of substance misuse in schizophrenic patients as compared to general population. Those male schizophrenic patients with history of substance misuse were more likely to have aggression. These group needs special precaution and probably in need of additional approach of treatment.

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ORIGINAL ARTICLE

THE ASSOCIATION BETWEEN THE ATTENTION DEFICIT HYPERACTIVITY DISORDER(ADHD) SYMPTOMS AND BULLY/VICTIM PROBLEM AMONG MALAYSIAN SIXTH-GRADERS

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Abstract

Objective: **School bullying in Malaysia is on the rise. While efforts are put together to combat the problem, the psychiatric aspect has been neglected. This is a cross-sectional study aimed to determine the association between the symptoms of ADHD and bully/victim problems among Malaysian sixth-graders attending primary schools in Kuala Lumpur.** *Methods:* **A total of 410 sixth-graders from seven randomly selected schools were assessed with regards to bully/victim problems and ADHD symptoms using self-reported questionnaires. Malaysian Bullying Questionnaire was used to rate bully/victim problems while ADHD symptoms were assessed using Conners-Wells' Adolescent Self-report Scale (CASS). Teachers and parents also assessed students' ADHD symptoms using Conner's Teachers Rating Scale (CTRS) and Conner's Parents Rating Scale (CPRS), respectively.** *Results:* **Self-reported questionnaires showed that 61.2% of the children were involved in bully/victim problems. The ADHD symptoms were found significant in relation to bully/victim problems as tested by multiple logistic regression. Only students and parents reported significant ADHD symptoms among the bully/victim groups. The ADHD symptoms reported by students were significant among bullies(OR=0.59,CI=0.42-0.83, p<0.01) and bully-victims(OR=0.55 CI=0.37-0.81,p<0.00). Parents reported significant ADHD symptoms only in victims(OR=1.260,CI=1.02-1.56,p=0.03).** *Conclusion:* **The ADHD symptoms were significantly present among bullies, victims and bully-victims. These findings open a new perspective of managing bully/victim problems since effective treatment is available for ADHD.** *ASEAN Journal of Psychiatry, Vol.11 (1): Jan – June 2010: 79-86.*

Key words: ADHD symptoms, bully/victim problems, sixth-graders, Malaysia

Introduction

Bully/victim problems are a common phenomenon among school children and prevalent worldwide [1-3]. The main players in this increasing social phenomenon are bullies, victims and bully-victims. Bullies refer to children who bullied others, victims are children who were being bullied or victimized, whereas bully-victims refer to children who were initially being bullied, but to which they retaliated and became bullies themselves.

The psychiatric aspect of the problem has not been given much emphasis. Research concerning the problem in the field of child psychiatry is scanty [4] despite the increasing numbers of psychiatric disorders related to bully/victim problems. For instance, ADHD, depression, anxiety, conduct disorder and oppositional defiant disorder are common psychiatric disorders found among children involved in the bully/victim problems [5]. Another study found bullying and victimization as potential risk factors for adolescent depression and suicidality [6]. Among girls, frequent victimization has been associated with suicide attempts and completed suicides in later years [7]. Among rural middle school students in China, school bullying had also been identified as risk factor for attempted suicide [8]. The long term implication of bullying on mental health had also been documented. A longitudinal study of 614 participants found that bullying significantly increased risk of later depression among children from less affluent socioeconomic background [9].

Children with bully/victim problems were vulnerable to have psychiatric disorders. ADHD in particular, has been found to be the commonest psychiatric disorder among bullies (29.2%), as well as being common among victims (14.4%) and bully-victims (17.7%) [5]. Children with bully/victim problems were psychologically disturbed, with externalizing behaviour and hyperactivity being especially related to bully-victims [10]. A study involving 577 fourth-graders found ADHD to be significantly associated with bullying (OR=3.8, CI= 0.1-3.1) and being bullied (OR=10.8,CI=4.0-29) [11]. Another study had concluded that ADHD has a direct relation to bullying behavior in males and to victimization in females [12]. All these studies suggest important connection between ADHD and bully/victim problems.

In Malaysia, the prevalence of bully/victim problems are rapidly increasing [13-14] and the seriousness of the problems could not be underestimated with the increasing trend of reported fatal cases. Previously, the problem had been largely perceived from the social aspect. Recent evidence has highlighted that the problem is psychiatric-related [5, 11]. Given the above, there is a need to examine the extent of the problem in the local context. The objective of this study is to determine the association between ADHD symptoms and bully/victim problems.

Methods

This is a cross-sectional study of sixth-graders, aged 12 years old from seven randomly sampled schools in Kuala Lumpur, Malaysia. Of the 826 students who were approached, only 445 students were given consent by their parents to participate in the study. Of these, 27 students were absent during the study period and 8 were excluded because they were known to have mental retardation. A total of 410 students

were finally recruited into the study proper. The study was approved by the Ethics Committee of the National University of Malaysia and Ministry of Education Malaysia.

Information was obtained from multiple informants namely; the parents, the teachers, and the students using various self-reported questionnaires. For the students, two different types of questionnaires were used, namely the Malaysian Bullying Questionnaire and Conners-Wells Adolescent Self-report: Short Form (CASS:S).

The Malaysian Bullying Questionnaire was developed by Noran Fauziah Yaakob [14]. It was a self-reported questionnaire in Malay language which is used to measure bully/victim problems. It consists of 20 questions which measure bullying behavior, being bullied and bully-victim. Students were asked to rate themselves with regards to the above in the past one month using a likert scale of 0 (never), 1 (once or twice), 2 (three or four times) and 3 (more than five times). Bullies were defined as children who bullied others three or more times in a month. Being bullied referred to children who were bullied three or more times in a month. Bully/victims were defined as children who bullied others and being bullied, three or more times in a month.

Conners-Wells Adolescent Self-report: Short Form (CASS:S) was used to assess the ADHD symptoms in the students. It consists of 27 items measuring the ADHD symptoms, which are reported by the students themselves. There are four subscales namely conduct problems (6 items), cognitive problem/inattention (6 items), hyperactive-impulsive (6 items) and ADHD index (12 items) [15].

The parents were invited to assess the ADHD symptoms in their children using Conners' Parents Rating Scale: Short Form (CPRS:S). It consists of 27 items measuring the ADHD symptoms in children in the past one month. There are four subscales including oppositional (6 items), cognitive problem/inattention (6 items), hyperactivity (6 items) and ADHD index (12 items)) [15].

Conners Teachers Rating Scale: Short Form (CTRS:S) was used by the teachers to assess the ADHD symptoms in the students. The teacher's version consists of 28 items comprising four subscales: oppositional (5 items), cognitive problem/inattention (5 items), hyperactivity (7 items) and ADHD index (12 items) [15].

All the questionnaires were translated and back-translated into Malay language but not validated locally. Students were gathered in the school hall and asked to complete the questionnaires during the given time. Teachers were then asked to complete the relevant questionnaires for the students under their care. A total of 37 teachers were involved with teacher: student ratio of 1:11. Teachers were given two weeks to complete the questionnaires before being collected by hands. Questionnaires for parents were distributed through their children. Parents were also given two weeks to complete the questionnaires. The completed questionnaires were also collected by hands through their children.

Statistical analysis

The Statistical Package for Social Studies (SPSS) Software version 13.0 was used for data analysis. Q-Q plot and KS were used to check for normality of the data. Chi-square tests were used to examine for association between the different bully/victim groups

and prevalence and socio-demographic features. Kruskal-Wallis test was used to measure the relationship between ADHD symptoms reported by the different informants, and the different bully/victim groups. Multiple logistic regression analysis was subsequently used to examine the relationship between the various socio-demographic variables and ADHD symptoms (reported by the various informants), among the bully/victim groups.

Results

Of the 410 students participating in this study, 2.4% were involved in bullying others, 41.2% were bullied and 17.6% were bully-victims. The details of the prevalence and the socio-demographic characteristics in relation to the bully/victim problems were reported in previous article [16].

Table 1. Kruskal-Wallis test comparing median ADHD symptoms score reported by students, teachers and parents between the different bully/victim groups

	ADHD symptoms reported by different informants Median(25th – 75th percentiles)		
	Bullies	Victims	Bully-victims
Students	18(4.75-24.5) p<0.01*	18(4.75-24.5) p<0.01*	11.5(8.25-17) p<0.01*
Teachers	3.5(0-16.25) p=0.31	3.5(0-16.25) p =0.31	2(0-9.5) p=0.31
Parents	11.5(3-21) p<0.03*	11.5(3-21) p<0.03*	9.5(5-13.75) p<0.03*

p<0.05*

Table 1 presents Kruskal-Wallis test analysis of ADHD symptoms reported by different informants with bullies, victims and bully-victims. Findings showed statistically significant difference between ADHD symptoms reported by students and parents, with bullies, victims and bully-victims. ADHD symptoms reported by teachers were not significant. Only combined symptoms of ADHD were reported in this article.

Table 2. Logistic regression examining ADHD symptoms reported by students, teachers and parents, and bully/victim groups

	ADHD symptoms reported by different informants		
	Bullies	**Victims**	**Bully-victims**
	OR(95%CI)	**OR(95%CI)**	**OR(95%CI)**
Students	0.59 (0.42-0.83)	0.93(0.80-1.08)	0.55 (0.37-0.81)
	p<0.01*	p=0.33	p<0.00*
Teachers	1.03 (0.68-1.60)	1.234(0.98-1.55)	1.109 (0.72-1.71)
	p=0.88	p=0.07	p=0.640
Parents	0.80 (0.52-1.23)	1.260 (1.02-1.56)	0.897 (0.56-1.45)
	p=0.31	p=0.03*	p=0.656

(OR = Odds Ratio; p<0.05*)

The multivariate analysis of the ADHD symptoms among bullies, victims and bully-victims are displayed in Table 2. The ADHD symptoms rated by multiple informants were significant in association with bullies, victims and bully-victims. ADHD symptoms were risk factor for victims but protective against bullies and bully-victims.

Discussion

For a comprehensive assessment of ADHD symptoms in the adolescents, the symptoms were reported by three informants namely the students, teachers and parents. There were statistically significant difference in ADHD symptoms reported by students and

parents, between bullies, victims and bully-victims. Interestingly, symptoms reported by teachers showed no statistical significant between the various bully/victim groups. Teachers reporting of ADHD symptoms in the students may not be reliable given that one teacher had to report for 11 students. Teachers may need to know their students fairly well in order to pick up ADHD symptoms. This will be more difficult when they had to report on 11 different students.

In this study, ADHD symptoms reported by students were significant protective factor for bullies (OR=0.59, CI=0.42-0.83, p<0.01) and bully-victims (OR=0.55, CI=0.37-0.81, p<0.00). On the other hand, ADHD symptoms reported by parents was a significant risk factor for victims (OR=1.260,CI=1.02-1.56,p=0.03). This was not surprising since ADHD was found the commonest psychiatric disorders among bullies, and fairly common among victims and bully-victims [5].

It is expected that ADHD symptoms would lead to bullying which have been related to low self-control [17] and poor impulsivity [18]. On the contrary, these children who reported ADHD symptoms in themselves were found not at risk but protected from becoming bullies and bully-victims.

Depression and anxiety are common co-morbid conditions of ADHD. Similarly, poor social skills and lack of supportive peers are common correlates of ADHD [19]. Given the above, children who were depressed, anxious, had poor social skills and support were less capable to bully others or to retaliate which might explain why they were protected from becoming bullies and bully-victims. Therefore, it is possible that other factor related to ADHD rather than the ADHD symptoms that protect these children

from bullying others or retaliating when being bullied.

The above explanation may also be applied to those children reported by their parents to have ADHD symptoms, and found to be at risk of being victimized. Their peers might notice the ADHD symptoms in them which may be perceived as 'weird' thus making them target of bullies. These children might belong to the 'provocative victim' group who had the combination of both anxious and aggressive traits [18], and usually provoked others into bullying them but never retaliated.

The nature of the relationship between ADHD symptoms and the bully/victim groups could not be further established given the cross-sectional nature of the study. A recent prospective study found that children who were bullied showed more internalizing and school adjustment problems despite preexisting behavioural and school difficulties at entrance to school [20]. Therefore, internalizing problem as a consequence of being bullied becomes a vicious cycle promoting further victimization. Internalizing problems were found in these children who became bully-victims when they first entered school suggesting possibility that it may also be a causal factor [20].

This study has several limitations. Firstly, the cross-sectional nature of the study does not allow interpretation of causal relationship between variables. Secondly, information on bully/victim problems were gathered from adolescents only and not from parents and teachers. Reliance on self-reported questionnaires also has its own limitation. Thirdly, although information on ADHD symptoms were obtained from three different informants, the low teacher:

student ratio might have impaired the quality of reporting by the teachers. Fourthly, it may not be a representative of Malaysian sixth-graders since the sample were recruited from schools in the urban area of Kuala Lumpur only.

These findings provide further evidence linking ADHD symptoms to bully/victims and the complex interaction between them. Although findings need cautious interpretation given the limitations, contribution of ADHD symptoms to bully/victim problems should not be underestimated. Consequently, this has significant impact in the management of the problem, whereby screening and appropriate management of ADHD may need to be considered in the bully prevention program in the schools in Malaysia.

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ORIGINAL ARTICLE

PREVALENCE OF DEPRESSIVE DISORDERS AMONG CAREGIVERS OF CHILDREN WITH AUTISM IN THAILAND

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Abstract

Objective: **Raising children with autism is a stressful event for a family because of the interrelated negative effects. Studies on clinical depression among caregivers of children with autism are very few. The two main objectives were (i) to find the prevalence of Major Depressive Disorder and Dysthymic Disorder in caregivers of children with autism, and (ii) to determine the factors associated with these disorders.** *Method:* **A total of 27 caregivers were interviewed by using the Mini International Neuropsychiatric Interview Thai version to find clinical depression in caregivers.** *Results:* **Almost 26 % of the participants demonstrated depressive disorders, of which 14.8% and 11.1% met diagnostic criteria for Major Depressive Disorder and Dysthymic Disorder respectively. Low education level was a significant factor associated with depression.** *Conclusion:* **The prevalence of clinical depression is higher among caregivers of children with autism than in the general population. Hence, psychiatrists should include the assessment for caregivers' depression in their care plans for autistic children to enhance the development of the children and their caregivers.** *ASEAN Journal of Psychiatry, Vol.11(1): Jan – June 2010: 87-95.*

Keywords: Depressive Disorders, Autistic Caregivers in Thailand

Introduction

Leo Kanner described autistic disorder approximately 60 years ago but its cause remains unknown [1]. The *Diagnostic and Statistical Manual of Mental Disorders Fourth Edition Text Revision (DSM-IV-TR)* categorized Autistic Disorder under Pervasive Developmental Disorder (PDD). The essential features of autism are divided into three major categories: (1) qualitative impairment in social interactions, (2) difficulties in communication, and (3) restricted repetitive and stereotyped patterns of behaviors and/or interests [2].

Epidemiological studies examining the prevalence of autism have shown mixed results. Fombonne [3] found that the prevalence of autism increased from 4 in 10,000 cases in the 1960s and 1970s to 13 in 10,000 cases in 2005. Sirwanarangsun, P. [4] found the prevalence of autism to be 9.9 per 10,000 children in Thailand. Surinkaew, Louthrenoo, Charnsil and Witoonchart [5] estimated the prevalence of pervasive developmental disorder in Thailand at 3.2 per 1,000 children.

Health care professionals are concerned about the increase in the prevalence of autistic disorder. Research findings have demonstrated that families of children with autistic disorder experience emotional difficulties, which could perpetuate downward spiral effects on the family members' psychological well-being and the children's development. Evidence suggests that families of children with developmental disorders experience higher level of stress [6], depression [7], greater economic burden [8] and lower rates of employment and social participation [9]. Bitsika and Sharpley [10] found that nearly two thirds of parents of children with autism were clinically depressed.

This decrease in the family's well-being jeopardizes the children's development. Osborne, McHugh, Saunders, and Reed [11] discovered that early intensive intervention with autistic children is ineffective when parents of children experienced high levels of stress. This negative outcome prevents children from benefitting from the intensive intervention which is intended to advance their development.

Baker, McIntyre, Crnic, Edelbrock and Low [6] found that after accounting for the baseline stress level of the parents, the child's behavioral problems predicted an escalation of parental stress. The emergence of the child's behavioral problems was exacerbated by the stress of the parent. These findings suggest that autistic disorder generates interrelated multi-dimensional problems for the family and the child with the autistic disorder.

Research studies have illustrated that parents of children with developmental disorder experienced high levels of depression and stress but these studies failed to differentiate between clinical depression and symptoms of depression. Bailey, Golden, Robert &

Ford [12] reviewed 42 research articles and discovered that only eight of the studies investigated clinical depression in participants.

Clinical depression is described as "symptoms that are so pervasive and debilitating that they impair the ability to enjoy life or function as the individual normally would" [12]. Distinguishing between symptom of depression and clinical depression is crucial because it allows mental health professionals to effectively determine an appropriate course of treatment for the parents and the children.

Numerous research studies have identified a number of risk factors associated with depression in caregivers of children with developmental disorders [13 - 16]. These factors include gender [13, 15, 17], age [18], amount of time spent caring for the children [19], marital status [22, 23], parental education [24] and behavior problems of autistic disorder [6, 7, 13, 17, 20, 21].

Meanwhile, social support is considered a protective factor against psychological difficulties. Feldman, McDonald, Serbin, Stack, Secco and Yu [25] found that participants who scored above the Beck Depression Inventory's (BDI) cut off point received less social support than participants without depressive symptoms. Benson [26] discovered that informal support reduced levels of parental stress and depression.

This paper has two primary aims. The first is to investigate the prevalence of clinical depression among primary caregivers of children with autism. We hypothesize that the prevalence of clinical depression in the caregivers will be higher than in the general population. The second is to examine risk factors associated with clinical depression among caregivers such as gender, age,

education level, marital status, amount of time spent in caring tasks, social support, and severity of autistic disorder.

Method

This is a clinical study with a cross-sectional design. We recruited participants from the Outpatient Clinic of the Child Psychiatric unit, Maharaj Hospital, Chiang Mai, Thailand. The Ethics Committee of the Faculty of Medicine, Chiang Mai University, Thailand, approved this study.

Participants

Caregivers of children diagnosed with autistic disorder were invited to participate in the study. Diagnosed was made using DSM VI-TR criteria. The caregivers were included in the study if (1) they were above 18 years old, and (2) they were able to communicate in Thai language fluently. If the child had more than one primary caregiver, both parents were invited to participate. Participants with history of psychiatric disorders prior to nurturing the children were excluded from this study.

Materials

Demographic data was collected using the interview form we designed. The Mini International Neuropsychiatric Interview (MINI) Thai Version 5.0.0 models A and B were used to diagnose Major Depressive Disorder and Dysthymic Disorder. The MINI has the advantages of being concise, and focused mainly on current diagnoses [27 - 29]. Studies have shown that the MINI has significantly high reliability and validity scores [28, 29]. Kittirattanapaiboon, & Khamwongpin [30] had tested the validity and reliability of the Thai version of MINI and found a significant Kappa, sensitivity, and positive predictive value of the Thai version of MINI.

Severity of the autistic disorder was measured by the Childhood Autism Rating Scale (CARs). CARS is a diagnostic assessment method that rates children on a scale from one to four for various criteria, ranging from normal to severe, and yields a composite score ranging from non-autistic to mildly autistic, moderately autistic, or severely autistic. The scale is used to observe and subjectively rate fifteen items. Total CARS scores range from a fifteen to 60, we can use the score to severity grading as 15-30 - non-autistic,30-37 - mildly-moderately autistic and 37-60 - severely autistic.

Although CARs was developed before the publication of the *DSM IV*, studies have demonstrated that CARs is nevertheless an effective screening device for autism [31, 32].

Procedure

The caregivers of children with autistic disorder according to the *DSM-IV-TR* were invited to participate in this research. Demographic data was collected using questionnaires interview form designed by the researchers. A trained psychiatric resident at Maharaj Hospital used the Thai version of MINI models A and B to diagnose depressive disorder in the participants. The CARs was use to evaluate the severity of autistic symptoms of the children. The caregivers with clinical depression were referred to the psychiatrist first for further assessment and treatment.

Data Analysis

We used descriptive data analysis to interpret the results. The student t-test was used to evaluate continuous variables. The nominal risk factors were calculated by using Fisher's Exact Test.

Results

A total number of 27 participants (N=27) who met the inclusion criteria were enrolled. Table 1 shows the demographic data of the participants. There were 12 (44.40%) male and 15 (55.60%) female participants with a mean age of 46.70 years. The majority of the participants was married and had an average of 11.37 years of education. Twenty-four participants in this study were parents with autistic children and three others were relatives of autistic children.

Table 1 Demographic Data of the participants

Variables	%(*n*)	*M*	*SD*
Gender			
Male	44.40 (12)		
Female	55.60 (15)		
Age		46.70	8.50
Education (in years)		11.34	5.04
Marital Status			
Single	3.70 (1)		
Married	81.50 (22)		
Widowed	3.70 (1)		
Divorced	11.10 (3)		
Number of Children		1.63	0.69
Occupation			
Farmer	7.40 (2)		
Corporate Employee	11.10 (3)		
Business Owner	18.50 (5)		
Government Officer	22.20 (6)		
Unemployed	18.50 (5)		
Other	22.20 (6)		
Income		468.82	299.65
Amount of time with children with autism (hour per day)		11.89	4.13
Social support			
Available	70.40 (19)		
Unavailable	29.60 (8)		
CARs		35.65	5.41

(M = Mean, SD = Standard deviation; CARs = Childhood Autism Rating Scale).

Note. N = 27.Year of education was measured from Grade 1 up to the highest education participants received. The amount of time spent to care for the child was measured in hour/day ratio. Income was measured in Thai Baht; the exchange value was 36.34 Baht per $1 on March 6, 2009.

The prevalence of depressive disorders in this sample was 25.6%. The results showed that 7 of the 27 participants were clinically depressed. Of these 7 participants with clinical depression, 4 (14.8%) and 3 (11.1%) participants were diagnosed with Major Depressive Disorder and Dysthymic Disorder respectively. Psychiatrist used DSM-IV-TR to confirm the diagnosis for all 7 participants and also offered appropriate treatment.

Analysis of the risk factors associated with depression in caregivers was evaluated. The results showed that the number of years of education was the only factor that significantly predicted depression among caregivers. Table 2 shows the risk factors associated with depression in caregivers

Table 2: Risk factors associated with depression

Risk Factors	Depressive group			Non-depressive group			*p*
	n	*M*	*SD*	*n*	*M*	*SD*	
Gender Male Female	2 5			10 10			0.41
Age		48.00	8.31		46.25	8.74	0.65
Education (years)		7.86	4.74		12.60	4.64	0.03*
Marital status Single Married Widowed Divorce	0 6 0 1			1 16 1 2			1.00
Amount of time in child care		11.43	5.29		12.05	3.79	0.74
Social Support Available Unavailable	4 3			15 5			0.63
CARs		38.93	4.62		34.5	5.29	

(Note. N = 27. Year of education was measured from Grade 1 up to the highest education participants received. The amount of time spent to care for the child was measured in hour/day ratio; p < 0.05)

Discussion

Our findings confirmed our first hypothesis about the prevalence of depressive disorders among caregivers of autistic children. The result does not only confirm the results of Baker et al[6] that caring for children with autism causes stress to caregivers, but it also shows that it is not only an emotional reaction but it is a disorder. That means that it needs treatment. The overall prevalence rate of depressive disorders in our sample is 25.6%, which is higher than the general population. In Thailand, the prevalence rates of MDD and Dysthymic Disorder are 3.2% and 1.2% respectively [4]. In the Asia Pacific region, rates of lifetime MDD range from 1.1% to 19.9% with a median of 3.7% [33].In our sample, 14.8% and 11.1% of participants met the diagnostic criteria for MDD and Dysthymic Disorder respectively.

Thailand has limited its research on autism and its effects on individuals and society. This research provides additional understanding about autism and its impact on caregivers in Thailand. Osborne, McHugh, Saunders, and Reed [11] found that greater psychological problems in the caregivers lead to a greater negative impact on the child's development. Our findings suggest that caregivers of children with autism may have higher prevalence of clinical depression. This interrelation is important and should be addressed in our management plans for autistic children and their caregivers.

We examined seven risk factors associated with depression in caregivers of children with autistic disorder. The only factor significantly associated with depression is the education level of the caregivers. Caregivers who were clinically depressed had lesser years of education than those who were not clinically depressed. Participants with depression had an average of eight years of education, whereas those who were not depressed averaged about 13 years of education.

Low levels of education were found to be associated with depression that might reflect the participant's capability to cope with the chronic stress enduring situations. Additionally, low education might jeopardize the caregivers' ability to search for available resources and support systems leading to greater risks for depression among the caregivers. This finding correspond to Ladin K's finding [34]. The education level varies among the Thais; with the majority still having a minimal education level [35]. Since education level is the risk factor for depression among caregivers, mental health professionals should be attentive to screen and monitor caregivers with low education in order to provide necessary interventions and treatments. The other factor that is almost significantly associated with depression is severity of autistic symptoms. Children of depressed caregivers have CARs higher than children of non depressed caregiver. But maybe the sample size is too small to have a significant difference.

The reason that other factors were not significantly correlated with the dependent variable in this study might be due to the cultural factors within Thai people. The nature of Thai society is a collective and supportive culture. Most Thais usually stay together as an extended family. Even if they live together as a nuclear family, there will usually be close relatives such as sisters, brothers or parents living nearby them. This characteristic may influence our results; perhaps the support that family receives from other family members, relatives, friends, community and society have a greater protective power to compensate for other limitations experienced by the family.

There are some limitations to this study. First, the small sample size of our study might affect the accuracy of the prevalence rate and significant factors associated with depression in caregivers. Furthermore, the sample of our study does not represent national data on depression among caregivers because our sample is regionally based. Future research should aim to include a larger population randomly selected from a national sample to determine with more confidence the incidence of depression among caregivers of children with autism. There are other factors that should determine the factors associated with depressive disorders such as the number of other children who are dependent on their caregiver, the age group of children with autism and other comorbid conditions in children with autism.

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REVIEW ARTICLE

MENTAL HEALTH: SPECIAL NEEDS AND EDUCATION

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Abstract

Objective: **This review paper will be discussing on mental health of children and adolescents in Malaysia. Behavioural problems, academic failure and underachievement in school are common reasons for referral of children to the medical services. Epidemiological research has substantiated a possible seriously mismatch between the rates of child mental health problems across a broad spectrum and the number of children actually referred to existing services. These data suggest it is imperative in Malaysia to empirically investigate the present realities in the schools in regard to special education needs and their neglect.** *Methods:* **The present preliminary study is based on a literature review of epidemiological features of learning disorders and co-morbidities using the Cochran library key word search. Available statistics for learning disorders from the WHO are compared with records for the year 2007 from the Ministry of Education in Malaysia.** *Results:* **Findings of this comparison with international prevalence rates of learning disorders and related diseases show a sizable gap between real existing needs in Malaysia, and their perception. Based on quantitative estimates, the findings suggest that some 1.4 million children in Malaysia have mental health difficulties that interfere with normal functioning and development, but adequate services for intervention are largely not available.** *Conclusion:* **The present undersupply of adequate service for children with learning difficulties is aggravated by the lack of systematic developmental screening in early childhood in Malaysia. This status affects the outcomes and development of the general education system in efforts to meet challenges in the new century.** *ASEAN Journal of Psychiatry, Vol.11(1): Jan – June 2010: 96-102.*

Keywords: **Mental health, special needs and education**

Introduction

The term learning disorder comprises any neuro-developmental disorder that interferes with acquiring academic and/or social skills [1]. It refers to those with skill-specific disabilities, emotional disturbances and disruptive behaviours, as well as infants with mental retardation, developmental delay and other health impairments [2]. Learning disorders affect how information is received, processed or communicated [3]. The expression "learning disorder" encompasses a broad and heterogeneous diagnostic category. As internationally recognized and consent disorders [4], there

is no scientific controversy regarding their validity and their adverse impact on quality of life without sufficient intervention. Undetected learning disorders influence the individual academic performance over the short term, but the entirety of learning disorders impact the effectiveness of the whole educational system in the long run [5]. The lack of clarity in conceptualising these disorders minimises the effectiveness of special education programs, especially when resources are limited [6]. It makes it even more difficult to meet the needs of different groups such as children at risk, children with diagnosable skill deficits, and children with multiple levels of impairment. For example, developmental disorders are confused with learning disorders and other related or underlying impairments such as attention deficit disorders. Longitudinal studies prove that the course and prognosis of learning disorders depend mainly on the availability of systematic interventional treatment programs [7].

Source of survey data

The "Regional Conference for Special Needs Education" in Kuala Lumpur (July 20-22, 2009) provided a platform for practitioners, professionals and researchers to share the latest findings related to special needs education and to discuss general implications for the educational system. The panel discussion at the Conference revealed that the last international demand analysis done by WHO dated back more than 10 years ago. In Malaysia, the latest statistics for learning disorders for the year 2008 are currently not available. Malaysia's first attempt to address the problems of children with special requirements dated back to the year 2001. Since this time, a special education program has been addressing the needs of children with learning disorders, as well as children with hearing and vision impairments. This program is entitled

"Program Pendidikan Khas Kementerian Pendidikan Malaysia". It offers special schools ("Sekolah Khas") for students with vision and hearing disabilities. In addition, a special education integration program ("Program Pendidikan Khas Integrasi") is provided for children with learning, hearing and vision disabilities. The programs are carried out in normal primary and secondary schools, as well as in technical/vocational secondary schools. The curriculum uses the withdrawal and partially inclusive approach to teach and learn. It is hypothesized here that these programs may be inadequate to meet the huge task of effective learning in especially at the start of a new century.

Methods

To acquire an empirical preliminary comparative picture of the situation in Malaysia, epidemiological statistics from WHO for learning disorders were compared with local rates given by the Ministry of Education (MOE) for the year 2007. This literature review comparing prevalence rates did not intend to cast doubts on the undeniable merits of the education system in Malaysia. Rather, it sought to help develop better awareness of any weaknesses in the system.

Incidence by international comparison

The following population parameters by age group are provided by the Department of Statistics in Malaysia: in 2007, Malaysia had a total of 27.17 million. The age group between 0-14 years old included 8.86 million children. In comparison with international rates of disorder prevalence from the WHO in 2007, the following picture emerged for Malaysia:

Table 1: Comparison of International and National Epidemiological Statistics for Learning Disorders

		W H O – Estimation assigned to Malaysia **(Age 0-14)**	**Malaysian numbers (Age 0-14)** **Year 2007**
Learning Disabilities	6-10%	531 600 – 886 000	15 195
Hearing Impairments	4-5%	354 400 – 443 000	711
Vision Impairments	1-2%	88 600 – 177 200	119
Dyslexia	4-6%	354 400 – 531 600	306

According to WHO, the international prevalence rate of learning disorders varies between 6 to 10%. In view of 8.86 million children in Malaysia under the age of 15, the expected frequency amounts from 531,600 to 886,000 affected children. In 2007, the Ministry of Education merely recorded 15,195 students with learning disabilities, far less than the expected possible range. The rate of hearing impairments worldwide ranges between 4 to 5%. With regard to this prevalence, a number of 381 000 cases minimum would be calculated for this country, while 711 cases were noted. The incidence of vision impairment varies between 1 to 2%. Corresponding to this baseline, a number of 88,600 to 177,200 are expected. In 2007, only 119 cases were listed in Malaysia. Internationally, the frequency of dyslexia is agreed to be about 4 to 6%. Under this assumption, we could anticipate at least 354,400 affected children for this country compared with 306 recorded cases in 2007. The comparison points up a total estimated population of approximately 1.4 million disadvantaged children without the opportunity for adequate treatment and intervention.

Survey data

Relevant data for improvement can be obtained by questioning practitioners, professionals and researchers, who are involved in the education system. To get data about the attitude of practitioners towards the present situation, a questionnaire was designed and administered in a semi-structured interview to the participants of the "Special Needs Conference". The interview focussed on the awareness of weaknesses, the degree of confidence and satisfaction with the current education system. The participants were questioned about their own experiences with learning disorders inside the classroom and were asked for suggestions to initiate interventional programs, e.g. what kind of information is considered helpful for practitioners in the education system. 62 participants responded to the questionnaire.

Table 2: Excerpt of Questionnaire

Selection of Questions	Results (%)
Confident in managing future tasks	45 %
Satisfied with present learning outcomes	23 %
Increasing rate of learning disorders	84 %
Personal experience with misplaced children	96 %
Learning difficulties start in primary school	52 %
Learning problems start in early childhood	94 %
Learning problems will grow out over time	42 %

As shown in the above table, 45% of the respondents were confident that the present education system could manage future challenges, but only 23% were satisfied with present learning outcomes; 84% of the participants were aware of an increasing rate of learning disorders in the present education system. Analogous with this result, 96% of the respondents had personal experience with children who were misplaced in the educational setting. Referring to the onset of difficulties half of the participants (52%) were of the opinion that learning difficulties start in primary school. However, 94% held the view that learning problems start in early childhood. Almost half of the participants (42%) believed that learning problems would be overcome with time as children grow older, without special intervention. The stated confidence in the present education system is inconsistent with the low level of satisfaction with present learning outcomes, although it corresponds with the recognition of the increasing rate of learning disorders. The finding, that 94% of the participants had personal experience with misplaced children reflects a possible shortage of adequate programs to cater to the needs for children at risk. Interestingly, only half of the respondents (52%) assumed that learning difficulties start in primary school. However, the overwhelming majority of 94% believed that learning problems start in early childhood. Another significant result of the questionnaire was the finding that almost half of the participants (42%) speculated that learning problems would be overcome without intervention over time.

Discussion

The current and previous literature review has shown a mismatch between rates of child mental health problems identified in epidemiological studies and the number of children referred to adequate services innumerous different countries [8]. The approximate estimate of 1, 4 million disadvantaged children represents an enormous challenge for the education system. According to their needs, children

are exposed to difficult learning settings and they are unable to access essential, adequate intervention. Children with difficulties do not receive appropriate support to reduce their deficits and to build up their own potential. Such problems also have a social geography, where children in families with lower income and in rural settings may have a greater likelihood of having less access to proper intervention. So children with difficulties, urban and rural, lower income and more professional family backgrounds, may all exhibit an increasing rate of learning dysfunctions. Additionally, the children are at a higher risk of developing coexisting disorders which will decrease their possibilities to function well in adulthood. Furthermore, children without difficulties suffer from being taught in an environment where such difficulties among their classmates are not being properly addressed.

A common international picture

Referring back to the epidemiological findings, it is crucial to be aware that the dimension represents an underestimate due to the broader international standard baseline of population. Here it refers to an age group from 0 -18 years old, but the Malaysian figures range from 0-14. This affects daily teaching practise: in a hypothetical classroom, the common first grade starts with a normal developmental variation of about 3 years [6]. The average class size is 25-30 children. According to international prevalence rates, one can expect to find 4-5 children with special requirements in each and every classroom [9]. A teacher may have to provide instruction and pedagogical care for a classroom of children with more than three years difference in cognitive development. Additionally, the teacher has to find ways to assist 4-5 children with special risks for academic failure. With these unfavourable conditions, teachers are nonetheless expected to meet excellent academic performance outcomes. Hence, this

unbalanced situation exerts major pressure on teachers, parents and children. It can be assumed such pressure is at quite high levels in various schools and classrooms in Malaysia.

The phenomenon of "shadow teaching" represents the desperate attempt from parents to cope and compensate [10]. This situation is amplified by the observable and empirically demonstrable lack of systematic developmental screening services for early childhood in Malaysia, familiar to all teachers in the educational system. This deficit situation clashes with international recommendations which underscore the urgency of early assessment and intervention in childhood [11]. Understanding learning disorders requires a developmental perspective because these disorders have their origins in biological environmental factors. They affect the developmental course of children, especially in acquiring academic skills [12]. The first signs of risks for developmental delay should be diagnosed as early as possible, during infancy or early childhood [11]. Otherwise skills which are substantially below the expected appropriate developmental level are not recognized. As a result of the lack of early childhood assessment programs in Malaysia, it can be hypothesized that many children at primary school level have unrecognized mental health problems. These deficits interfere with normal functioning at school entry. Empirical research on this is badly needed.

Conclusion

This preliminary study suggests the high probability that the present conditions of the Special Needs Education Program in Malaysia and the lack of early childhood developmental screening programs negatively impact the daily education setting. One conclusion is that the programs of the present education system are not adequate to address the real situation in demands for special needs intervention,

especially at the primary level. As Levine (1992)[5] stresses, the lack of clarity in conceptualising these disorders undercuts the effectiveness of special education programs, especially when resources remain limited. Recent years have seen tremendous advances in understanding and furthering the education systems worldwide [13]. In the Asia Pacific region, especially Malaysia has put significant effort into the development of its educational system. But less attention has been given to a salient dimension, namely the related areas of child development, education and mental health. Child and adolescent disorders require a continuum of care over time and services, linking all settings such as hospitals, families and schools [14]. Only empirical research can shed light on the actual realities at the grassroots in the Malaysian setting. Currently the average education setting has to manage the complex task of identification and implementation of special need education programs without being prepared or having adequate tools. Identifying aspects of mental health deficits and a vigorous program of intervention represents a major challenge for educational reform and strengthening of the basic system of proper education for all in Malaysia in this new century. It calls for new avenues where experts in social pedagogy, special education and clinical and school psychology work together to better identify, understand and address the existing realities.

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CASE REPORT

ERYTHROMYCIN INDUCED TORSADE DE POINTES IN A METHADONE MAINTENANCE PATIENT: CASE REPORT

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Abstract

Objective: **This case report highlights the risk of Torsade de Pointes (TdP), a life threatening cardiac arrhythmia in a heroin dependent patient receiving methadone substitution therapy who was prescribed erythromycin for upper respiratory tract infection.** *Method:* **We report a case of a 35-year-old Malay man on methadone maintenance treatment who developed TdP possibly due to drug interaction between methadone and erythromycin.** *Results:* **The patient reported feeling unwell, chest pain and feeling dizzy after consuming 2 doses of erythromycin. ECG monitoring showed prolonged rate-corrected QT interval leading to TdP. The patient was admitted to the ward where the cardiac arrhythmia ceased following methadone discontinuation. This cardiac arrhythmia was most likely due to drug interaction between methadone and erythromycin (an enzyme inhibitor) which led to an increase in methadone concentration and potentiated the adverse effects.** *Conclusion:* **As methadone is a beneficial treatment for heroin dependent patients, the risk of cardiac arrhythmia is of great concern. To avoid complications of drug interaction, patients on methadone therapy should be advised to seek medical assessment before taking other drugs. As TdP is life threatening, it is thus important that physicians and psychiatrists involved in the treatment of heroin dependent patients on methadone substitution therapy be made aware of this risk.** *ASEAN Journal of Psychiatry, Vol.11 (1): Jan – June 2010: 103-107.*

Keywords: **Methadone, arrhythmia, substitution, Torsade de Pointes (TdP), drug interaction**

Introduction

Opiate substitution therapy with methadone has been introduced as a pharmacological treatment option for heroin dependent

individuals in Malaysia recently [1]. Methadone, approved by the FDA in 1947, has been widely studied and prescribed, and has proven to be an established and effective pharmacological agent to treat heroin

dependent patients worldwide [2]. However, in recent years, the literature has documented cases of methadone associated cardiac arrhythmias [2, 3]. Most of these cases were reported among Caucasians, and thus far there has not been any reported incidence in Malay man. This case report highlights the case of a heroin dependent man on methadone substitution therapy who developed prolonged rate-corrected QT interval (QTc) and Torsade de Pointes (TdP) following concomitant administration of erythromycin.

Case Report

A 35-year-old Malay man presented to the accident and emergency department complaining of feeling unwell, chest pain and feeling dizzy, but no loss of consciousness. He also had fever and cough for 2 days and had visited his general practitioner who had prescribed erythromycin a day earlier. His fever and cough had subsided, but he complained of the onset of these new symptoms after taking the second dose of erythromycin. A review of his past medical history revealed that he was a previous intravenous heroin user who was attending a community methadone substitution programme for the past 8 months. He was prescribed syrup methadone 110 mg daily and claimed to be responding well to the community opiate substitution programme as he was heroin-free for the last 6 months. He denied any side effect or medical problem since taking methadone. He was not known to have cardiac, respiratory, hepatic or neurological disease. He was also not known to have any major mental health problem. He was

married with 2 children and worked as a security guard. He stayed in a rented apartment and smoked 14 cigarettes per day.

Physical examination revealed a conscious but lethargic looking man with normal vital signs and with no cardiovascular, respiratory or neurological abnormalities. Continuous electrocardiogram (ECG) monitoring at the emergency department showed sinus rhythm with a QTc interval of 520 ms (milliseconds) leading to Torsade de Pointes (TdP), but resolved spontaneously. Blood investigations revealed normal blood count and serum electrolytes, normal liver function, normal renal function and normal cardiac enzymes. He was admitted to the cardiac ward for monitoring, prescribed potassium and magnesium supplements, and methadone was discontinued and changed to buprenorphine. The patient's cardiovascular status remained stable and subsequent ECG monitoring after methadone cessation were normal. The patient was discharged with buprenorphine and a follow-up at the cardiology clinic 3 months and 6 months later revealed no further cardiac symptoms with a normal ECG. This case report was written after obtaining informed consent from the patient who agreed with the condition of strict anonymity that may not implicate him.

Discussion

In recent years, the literature has documented reports of methadone induced cardiac arrhythmias [2-4]. Most of these cases were reported among Caucasian heroin dependent patients, and thus far, the authors are not aware of such incidence in a

Malay man. In this case report, the authors would like to highlight the risk of cardiac arrhythmias, in particular QTc interval prolongation leading to Torsade de Pointes (TdP) in a heroin-dependent patient receiving methadone substitution therapy.

Torsade de Pointes (TdP) has unique ECG characteristics of twisting of the QRS complex around the isoelectric line. It is associated with prolonged QT interval, which may degenerate into sustained ventricular tachycardia and life threatening ventricular fibrillation. Among the known predisposing factors for acquired Torsade de Pointes (TdP) include an underlying cardiac or liver abnormality, electrolyte imbalance (hypokalaemia and hypomagnesaemia) and drugs (methadone, phenothiazines, tricyclic antidepressants and some antibiotics). The mechanism by which methadone induced cardiac arrhythmia was thought to be due to blockade of cardiac K+ channel [2]. As a consequence, the QT interval becomes prolonged and this may precipitate ventricular arrhythmias. In the above patient, the normalization of the ECG following methadone cessation suggests that the Torsade de Pointes (TdP) was most

likely caused by methadone as the patient had no other risk factors. A similar finding was also reported in the literature where the QT interval returned to normal within 24 hours following discontinuation of methadone [4].

Methadone is metabolized in the liver by the cytochrome enzyme CYP3A4. Inhibition of the CYP3A4 system may lead to an increase in methadone concentration and cause adverse effects [5]. Some of the known CYP3A4 inhibitors include antibiotics (e.g., fluoroquinolones and macrolides), antihistamines (terfenadine) and psychiatric drugs (e.g., haloperidol and chlorpromazine) (Table 1) [6]. The patient above had consumed erythromycin. Erythromycin, an enzyme inhibitor may have caused an increase in methadone concentration, leading to risk of cardiac blockade and risk of ventricular arrythmias [7]. Furthermore, erythromycin alone has been reported to cause QTc prolongation and provoke TdP, although other macrolides such as clathromycin had lesser risk of TdP but azithromycin did not [8]. The patient above however did not have any major mental health problem and was not on any psychiatric drugs.

Table 1: Examples of psychiatric drugs associated with Torsade de Pointes (this list is not comprehensive) [6]

Amitriptyline
Nortriptyline
Imipramine
Desipramine
Thioridazine
Chlorpromazine
Haloperidol
Droperidol
Clomipramine Maprotiline
Doxepin
Lithium
Chloral hydrate
Sertindole
Pimozide
Ziprasidone

Cases of methadone induced QTc prolongation and Torsade de Pointes (TdP) were more often reported in patients on high dose methadone above 400 mg daily [2, 3]. It should be noted that the above patient developed ventricular arrhythmia on a lower dose of 110 mg daily. This is probably due to drug interaction between methadone and erythromycin, where the inhibitory effect of erythromycin caused an increase in methadone concentration and thus causing the adverse effects. In the case above, although concern is raised regarding the inhibitory effect of erythromycin in patients receiving methadone, it is also pertinent to mention the potential benefits of the immunomodulatory effects of macrolides for treating pulmonary infections which is commonly encountered in patients receiving methadone maintenance therapy [9].

Although methadone has been reported to induce ventricular arrhythmias, the small risk of Torsade de Pointes (TdP) should not deter physicians or psychiatrists from offering methadone as a treatment option to heroin dependent individuals. In clinical practice, the adverse effects of QT prolonging drugs such as methadone can be prevented by avoiding its use in patients with pre-existing heart disease or risk factors as mentioned above, and/or electrolyte imbalance such as hypokalaemia. It should be emphasized that the risk of cardiac arrhythmia arises with the concurrent presence of other risk factors. Physicians and psychiatrists dealing with patients on methadone therapy should thus be alert to underlying medical diseases that may put patients on methadone at risk of cardiac arrhythmias, be vigilant to the potential of drug interaction between methadone and other drugs and cautious of electrolyte imbalance such as hypokalaemia (diarrhoea or vomiting and use of diuretics). Patients on methadone should be educated to seek medical advice before ingesting other drugs and to seek medical treatment and assessment if they experience chest discomfort, palpitations or dizziness. Part of

the evaluation of these patients should also include an electrocardiogram. In patients who experienced methadone induced arrhythmias, methadone should be stopped and an alternative safer medication such as buprenorphine, which is a partial opioid agonist should be considered. Any adverse event suggestive of cardiac arrhythmias should be reported urgently to drug safety authorities.

Conflict of interest: The authors have given seminars pertaining to methadone and buprenorphine.

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CASE REPORT

NON-BENZODIAZEPINE HYPNOTIC DEPENDENCE: A CASE REPORT

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Abstract

Objective: **This case report highlights the abuse and dependence potential of Zolpidem and the risk of life-threatening withdrawal symptoms upon abrupt discontinuation.** *Method:* **We report a case of Zolpidem dependence which presented with withdrawal symptoms upon abrupt discontinuation.** *Results:* **A 32 year old male, who had abused non-benzodiazepine Zolpidem for 6 years presented to the accident and emergency unit with generalized seizures upon stopping Zolpidem 'cold turkey'. He required admission to the neurology high dependency unit for stabilization of the seizures and was later managed by the addiction team where a tapering dose of benzodiazepine was prescribed.** *Conclusion:* **This case demonstrates that non-benzodiazepine agents can cause tolerance and dependence, and thus produce withdrawal symptoms upon discontinuation.** *ASEAN Journal of Psychiatry, Vol.11(1): Jan – June 2010: 108-112.*

Keywords: **Zolpidem, abuse, dependence, addiction, withdrawal, intoxication**

Introduction

Insomnia affects millions of individuals [1]. The prevalence of insomnia is reported to vary between 5-50 % depending on definition (i.e. insomnia symptoms, with or without daytime consequences, dissatisfaction with sleep, and insomnia syndrome) [2]. People who have trouble sleeping often complain of tiredness, mood disturbances and even intellectual disturbances and often seek medication to overcome their problem. Occasionally, these medications were consumed beyond their intended use [3, 4].

The medications used to treat sleep medication include benzodiazepine group and non-benzodiazepine group. The benzodiazepines commonly used to treat sleep disorders are lorazepam, clonazepam and diazepam, whereas the non-benzodiazepine group include Zolpidem and zopiclone [1]. In the last decade, the use of benzodiazepine as treatment for insomnia has come into disrepute as concerns were

raised regarding its abuse potential. The benzodiazepines were implicated for their abuse ability, resulting in the invention of non benzodiazepine hypnotics which were claimed to have no dependence properties. Hence non-benzodiazepines such as short-acting imidazopyridine hypnotics, e.g., Zolpidem which was touted to have low or minimal abuse or dependence potential were recommended for treatment of insomnia [3, 4].

Zolpidem is a rapid onset short-acting hypnotic with half-life of 1-2 hours. It has similar effects to benzodiazepines such as anxiolytic, sedative, anti-convulsant and myorelaxing effects [1]. It produces a more physiological sleep pattern (reduction in sleep latency and in number of awakenings, and an increase in total hours of sleep) with less next day amnesia. Zolpidem is a prescription item and the recommended dose is 5-10 mg per day [3, 5].

Zolpidem was initially considered by physicians as almost devoid of abuse and dependence potential. Several recent publications, however, have suggested that this drug carry a significant risk of abuse [3, 6]. Although Zolpidem dependence has been reported in the literature in the United Kingdom, Italy and India, to our knowledge there has not been any reported case of Zolpidem dependence in Malaysia [7-9]. This article reports a case of Zolpidem dependence which presented as generalized seizures upon abrupt discontinuation.

Case Report

A 32 year old male presented to the accident and emergency unit with seizures. He developed generalized tonic clonic jerky movements with uprolling of the eyeballs and drooling of the saliva. He was previously well and had no fever or headache, nausea or vomiting or blurring of vision. He did not have history of epilepsy or other medical illnesses such as hypertension or diabetes. He also did not have any history of psychiatric illness or substance abuse. Physical examination revealed no abnormalities. Blood investigations (full blood picture, renal profile and liver function test) were normal. CT scan of the brain was normal.

On further questioning, he revealed taking sleeping pills for the past 6 years. It all started at college where he initially started taking zopiclone for insomnia. However he changed to Zolpidem 3 years ago as he had faced difficulty in obtaining zopiclone in Malaysia. At the beginning, he took 10 to 20 mg Zolpidem per day but for the last 1 year he had increasing difficulty in sleep and consumed Zolpidem up to 90mg per night. He had attempted to abstain from Zolpidem but the attempts failed as he developed anxiety, agitation, became easily irritable, had poor concentration at work and developed rebound insomnia. He also reported increased in appetite and had gained 10kg in 2 years. There was no history of sleepwalking or being involved in any accidents before. On the day before the admission, he attempted to stop this dependence and go cold turkey. He stopped taking Zolpidem in the morning, but by mid-evening he became restless, anxious and had poor concentration. The seizures developed in the next morning.

The patient was subsequently admitted to the neurology high dependency unit for observation for 2 days. He was given midazolam infusion 1mg/ml and intravenous phenytoin 100 mg 8 hourly. The seizures stopped and the intravenous medications were discontinued and changed to oral sodium valpraote 200mg twice/daily. He was then referred to the addiction team. A review of his mental status revealed an anxious individual who was preoccupied

with his medication use. He was started on dose-tapering diazepam. He responded well; reported ability to sleep well, had no anxiety symptoms and did not develop any withdrawal symptoms. At 1 week follow up, he reported to be free from diazepam. An EEG done at outpatient clinic was normal.

Discussion

This case illustrates the problem of Zolpidem dependence in a man who consumed up to 90 mg of Zolpidem and presented with grand mal seizures upon discontinuing use. To our knowledge, thus far, the literature has not reported any such cases from Malaysia. Our patient developed withdrawal seizures about 24 hours after stopping the drug. Zolpidem withdrawal is probably the cause of the seizure as there was no other explanation of the seizure. He was well previously and did not have any history of seizure and blood investigations and CT Scan of the brain was normal.

Zolpidem, a non-benzodiazepine short-acting hypnotic is an imidazopyridine derivative and has selective affinity for the benzodiazepine receptor type-1 [1]. Initial reports said that it had lower potential for abuse than benzodiazepines [10]. However evidence from recent clinical and animal studies have showed that Zolpidem's potential for dependence should not be underestimated. Concerns have been raised regarding the routine use of Zolpidem as it may lead to dependence and abuse. The abuse potential of Zolpidem was noted to be similar to Triazolam, a benzodiazepine and animal studies had shown that the drug had higher reinforcing properties than benzodiazepine.

Contrary to initial reports, tolerance and dependence can develop with Zolpidem [1]. Thus discontinuation of the drug will induce withdrawal symptoms such as anxiety, tremor, myoclonic jerks, disorientation, confusion and generalized seizures [8]. In this patient, he had stopped the medication abruptly and subsequently developed life-threatening generalized seizures. However compared to a similar case in Italy where the patient was on Zolpidem 600 mg, our patient was only taking 90 mg of Zolpidem. This case is thus an important reminder that the non-benzodiazepine group has abuse and dependence potential and that abrupt cessation (even at a dose of 90mg) as opposed to tapering may lead to withdrawal seizures.

In a review of cases of Zolpidem abuse and dependence it was found that majority of cases were reported in former drug and alcohol abusers and/or patients with psychiatric disorders. However our patient had no history of psychiatric illness and neither history of other substance abuse. The literature also reports more cases of Zolpidem dependence compared to zopiclone dependence. This may however be dependent on availability of the drug [11]. It was interesting however that Zolpidem dependence occurred in all ages and was not gender dependence [6, 12]. In extreme cases, doses of between 30-120 times the recommended dose have been reported. Our patient however was on 90 mg daily (about 9 times the recommended dose).

In this case report, we would also like to highlight the danger of stopping Zolpidem 'cold turkey'. Our patient developed life-threatening seizures which required further management in a high-dependency unit. Similar complications were also described in the literature upon sudden discontinuation of Zolpidem [13, 14]. Other complications reported include delirium, psychomotor agitation, flushing and anxiety [15]. To avoid such complications, people dependent on Zolpidem need to be prescribed a tapering dose of long acting benzodiazepine

[9]. One possible explanation for the withdrawal seizure is that at supratherapeutic doses, Zolpidem may act non-selectively on omega 2 receptors of GABAA just like benzodiazepines and result in withdrawal seizures [16].

This article thus highlights the abuse and dependence potential of Zolpidem and the danger of sudden cessation of Zolpidem. We would like to suggest that its usage should be monitored as per use of benzodiazepines. Although Zolpidem and its group of non-benzodiazepine have been touted to have minimal abuse liability, doctors need to be aware that it has dependence potential and be vigilant of its abuse ability.

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OPINION

THE PSYCHOSOCIAL REHABILITATION (PSR) FOR SEVERELY MENTALLY ILLS IN MALAYSIA: THE PAST AND PRESENT

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Abstract

This paper discusses the evolution of PSR development for people with severe mental illness since the early 20th century in Malaysia. The various aspects of PSR include the activities, service target, the treatment settings, factors contributed to the development and the challenges that have been faced are also described along with the evolution, comparing the past and present. It is learned that despite of many challenges, PSR in Malaysia has now continued to progress with increasing supports from the stakeholders and is in keeping with the current PSR concept. *ASEAN Journal of Psychiatry, Vol.11(1): Jan – June 2010: 113-117.*

Keywords: **Psychosocial rehabilitation, severe mental illness, Malaysia**

Introduction

The current concept of Psychosocial Rehabilitation(PSR) aims to enable the persons with persistent and severe psychiatric illness to function in the community in terms of work, leisure and social contacts with the least possible involvement of mental health professionals [1]. The evolution of PSR activities happen worldwide [2] as well as in Malaysia. The evolution of PSR development for people with severe mental illness in Malaysia started since the early 20th century. Since then, there have been significant changes in the treatment settings, activities and involvement of stakeholders. Many factors have contributed to this development and many challenges have been faced.

Factors influencing the PSR development

Several factors that have influenced the development process of PSR in Malaysia. These include the development of psychiatric services with the shift of service focus, policy making, budget distributions and training of mental health professionals[3]. The involvement of other non mental health stakeholders in providing and supporting the psychiatric services has also been an important factor. This includes the non-governmental agencies, consumers groups, media and community members. Other relevant factors include the availability of medication and psychiatrically trained staff at primary healthcare and the urge to implement evidence-based rehabilitation activities throughout the years[4]

The Service Target

The target group of PSR in Malaysia has remained towards those with severe mental illnesses such as chronic schizophrenia, severe bipolar disorders and people with dual diagnoses (severe mental illness with mental retardation or chronic substance abuse). There are reasons of why this has remained the target. Clinically, the psychosocial complications are occurring more in the severely mentally ill people, where they often need help to progress and to recover from their complex illnesses. The serious deficits in the areas of social functioning and quality of home environment were found to have a significant association with low QOL[5]. Other milder form of psychiatric illnesses with better prognosis mostly do not need intense rehabilitation program. It is also due to limited budget; we need to use the money cost-effectively with specific target group.

The Past

There have been mixed opinions on whether the initial previous activities were based on scientific evidences. During that time, the psychiatrists who managed the severe chronic patients in mental institutions only depended on limited evidence on effective rehabilitation. Rehabilitation was not the major focus on psychiatric research during that time. It was due to the focus in managing severe mental illnesses which was mainly symptom control.

Therefore, psychiatrists in that era had to depend on their own interpretation of what could work for their patients, based on their own expert opinions. Started in 1911, rehabilitation activities in the mental institutions were mainly aimed to occupy patients' time while staying in the chronic ward. Many of the activities were domestic based, run in a group with minimal supervision. They created activities that suit the needs of their patients who during that time were people with chronic mental illnesses and being managed in big institutions. These activities were mainly focusing on occupying the patients' time rather than individual personalized outcomes.

The Present

Increasing body of knowledge of evidence-based PSR has influenced the rehabilitation activities in Malaysia throughout the years. When there were more evidence and services shifted from big institutions towards more balanced care in secondary and primary levels, rehabilitation activities have also changed because the patients' characteristics also differ. Now, patients with severe mental illness are becoming less chronic with shorter duration of illness and better prognosis [6].

The first proper attempt in community-based rehabilitation of the mentally ill occurred in Ipoh where a mental health association and day-care centre were opened in 1967 and 1969 respectively [7]. Later, a hospital-based day-care centre was also opened in 1971 for patients about to be discharged or on leave from acute care. Subsequently, similar day care centers were opened in more general hospitals all over Malaysia. Such centers were opened in general hospitals like University Malaya Hospital, Kuala Lumpur General Hospital, and Sarawak General Hospital. Doctors, psychiatrists, nurses, occupational therapists and social workers run the centers although not all in every case.

When Mental Health Unit was established in Ministry of Health under Public Health Division in 1996, psychiatric activities in primary healthcare centers all over Malaysia began[3]. Primary healthcare workers

started to work with psychiatrists from the general hospitals to develop the rehabilitation program. In Malaysia, it is a policy that rehabilitation activities need to go hand in hand with the other comprehensive management of people with severe mental illnesses[8, 9]. For example when the community psychiatric care activities started to be developed in general hospital setting all over Malaysia, the community mental health staffs started to do rehabilitation activities at the patient's home and started to involve the patient's relatives. This has encouraged the partnership between the hospital-based community team with the primary mental health care staff who are more accessible by the family. At the same time, it has supported the progress and evolution of the rehabilitation activities at both hospital-based and PSR centers[10].

In year 2000, a manual for psychosocial guidelines [10] was developed and soon the training of the mental health staff at primary healthcare level was conducted. The activities done at these PSR centers focused on helping individual patients through psychological, social and occupational techniques. Whenever necessary, the rehabilitation activities are also being conducted at home with the assistance from the caregivers. I think most likely, the strong family values and high sense of responsibility of providing care for other unfortunate family members have contributed to the higher acceptance towards home rehabilitation activities.

The Challenges

Even though the progress has been positive, the rehabilitation program still faced its challenges. Though structural development of PSR centers was successful and the staff trainings were conducted still some of the centers had difficulty to continue functioning. Several challenges were noted.

These include lack of resources, unresolved stigma and lack of supervision and training. For example, staffs in the healthcare centers including the supporting and professional staff like family medicine specialists are also responsible for other programs, therefore, they are overburdened. Providing services and care for severely mentally ill people is still found to be stigmatizing for the staff and their inner reluctance has limited the effort. Even when they are interested to implement the program, they still have lack of confidence especially on who to refer to when they face problems managing patients with complex needs. The link and professional support from the psychiatrist who based in the nearest general hospital are not well established. The observation reveals that if the psychiatrist is committed and supports the program (by continuous supervision and training), the program could work effectively. So, the program was rather based on the efforts of local champions rather than a shared paradigm shift of overall psychiatrists in Malaysia.

Facing the Challenges

Unfortunately, there is limited financial resource to further develop the occupational-based rehabilitation program in Malaysia. In 2003, Malaysian Psychiatric Association (MPA) as a professional body has taken a step to allocate fund to assist further development of PSR in Malaysia. The program is called the Circle of Care Program. It offers grants for rehabilitation activities at all levels, institutional, general hospital and primary healthcare and community or home-based. The activities include educating public and rehabilitation program for patients [11]. A number of non-governmental organizations (NGOs) are also providing the PSR activities under this program. For example, Malaysian Mental Health Association (MMHA) is running its

own day care centre with wide range of PSR activities. At present, MPA is also awarding staff and the centers that have significantly contributed to the development of successful PSR activities in Malaysia.

To me, some other important measures that need to be further taken to overcome the challenges include ensuring clearer top down policy on PSR, specific financial allocation, and more training of mental health professionals.

Conclusion

Generally PSR activities have progressed along with the development of psychiatric services in Malaysia. It started from mental institutional setting, and then progressed into general hospital, the primary healthcare centers and then becoming full community-based with initiatives from local community mental health teams, patients, family and local community members.

In conclusion, PSR development has undergone a long journey since last century in this country. Malaysia has now continued to progress in this area with increasing supports from the stakeholders. The majority of the current PSR practices are evidenced-based. They are to certain extent have been improved by more community participation, individually tailored rehabilitation activities and empowerment of patients and families. Hopefully the future PSR in Malaysia will be more accessible and as far as possible to be carried out in the patient's own environment and as nearest as possible to patient's home. This hopefully will contribute to the recovery process of people with severe mental illness in Malaysia and perhaps be a worthwhile experience to be shared with other similar background countries.

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EDUCATION SECTION

OBJECTIVE STRUCTURED CLINICAL EXAMINATION (OSCE) IN PSYCHIATRY NEW CURRICULUM UNDERGRADUATE POSTING AND ITS STANDARD SETTING PROCEDURE: AN EXPERIENCE IN UNIVERSITI KEBANGSAAN MALAYSIA (UKM)

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Abstract

Objective: **This study aims to report on the process of standard settings (SS) and to compare the passing rates between the norm-reference and SS methods, for OSCE in psychiatry undergraduate examination at UKM for 2009/2010 session.** *Methods:* **In the SS method, examiners were asked to imagine the performance of a minimally competent student and gave marks using a standardized check-list. The marks in particular outliers were discussed. After the first round, the examiners went through the same process again, to rate the minimally competent students independently. The median of the marks was taken as the passing mark for the particular question. The passing rate using the passing mark of 50% in the norm-reference method was compared to the passing rate from the passing mark obtained from the settings method.** *Results:* **For question 1, the passing rate with the norm-reference method (i.e. passing mark of 50%) was 93% (106/114) and that by the SS method was 72.8% (83/114). For question 2, the pass rate with the norm-reference method was 92% (105/114) and that by the SS method was 67.5% (77/114).** *Conclusion:* **The passing rates between the two methods showed significant differences. Although OSCE is an improvement to the undergraduate psychiatry examination in Universiti Kebangsaan Malaysia, there were few limitations and challenges that need to be tackled for further improvement.** *ASEAN Journal of Psychiatry, Vol.11(1): Jan – June 2010: 118-127.*

Keywords: **Standard settings, OSCE, Universiti Kebangsaan Malaysia**

Introduction

Since it was first described by Dr. Ronald Harden in the 1970s, the objective structured clinical examination (OSCE) [1] has been extensively used in medical schools throughout the world [2]. OSCE allows different psychiatric skills and technique to be performed and observed in the examination setting. With the use of

standardized patients, the standardization of OSCE content and its level of difficulty is made possible [2].

Standard setting was used in OSCE. It refers to "a process whereby the criteria to be used to pass or fail students are defined prior to administration of the examination" [2]. Various methods are available for standard setting; each has its own drawbacks [3]. The most widely used is probably the Angof method which relies on the experts' judgment and prediction of an imagined performance of minimally competent students [4]. This method which uses borderline group of students as an anchor involves examiners identifying borderline student at each station and the marks of the borderline student is used as a passing mark for the station [5].

OSCE for psychiatry undergraduate examination was recently introduced in UKM and the first group of students sat for the examination in year 2008. This paper aims to: (i) report the standard setting method and its process for OSCE in psychiatry examination in UKM in September 2009, and (ii) compare the passing rates between the norm-reference method and modified Angof SS method.

Methods

One hundred and fourteen students sat for psychiatric OSCE in September 2009. Four sets of OSCE ran concurrently. Each set consists of 10 stations which include two manned questions. A manned station refers to a station that has a standardized patient and an examiner. Students were given ten minutes to perform a certain task, observed by an examiner who assessed the student using a standardized check-list (appendix B). After the manned station, students moved to an unmanned station to answer link questions, related to the previous manned station. Manned stations were designed to assess psychiatric interview skills whereas the related clinical knowledge was assessed in the unmanned station. Standardized patients (SP) were used in this examination.

The Modified Angof standard setting method was used to determine passing mark for the manned stations instead of the arbitrary 50% passing mark. Examiners were asked to imagine the performance of a minimally competent student for a particular station and gave their marks for the 'imagined performance of a minimally competent student' independently using the same checklist. Nine and eleven examiners for Question 1(Q1) and 2 (Q2) respectively discussed their marks, particularly where there were outliers in the marks range (Table 1). Within fifteen to thirty minutes after the discussion of Q1 and Q2 respectively, examiners went through the same process of rating the 'imagined performance of a minimally competent student' independently. Marks for each item in the check-list were calculated to get the total marks for the particular question. The median of the total marks was taken as the passing mark for that question.

Results

Table 1. Marks for pre- and post- standard setting process

	Pre-standard setting		Post-standard setting	
Question 1 (case of obsessive compulsive disorder (OCD)) (n=9)	Examiner 1	12.5	Examiner 1	12
	Examiner 2	11.5	Examiner 2	11
	Examiner 3	11	Examiner 3	11
	Examiner 4	11	Examiner 4	11
	Examiner 5	11	Examiner 5	**11**
	Examiner 6	10.5	Examiner 6	11
	Examiner 7	10	Examiner 7	10.5
	Examiner 8	10	Examiner 8	10
	Examiner 9	8.5	Examiner 9	10
Question 2 (case of assessment of a suicidal patient) (n=11)	Examiner 1	12.25	Examiner 1	11.5
	Examiner 2	11.5	Examiner 2	11
	Examiner 3	11.5	Examiner 3	11
	Examiner 4	11	Examiner 4	11
	Examiner 5	11	Examiner 5	10.75
	Examiner 6	10.5	Examiner 6	**10.5**
	Examiner 7	10	Examiner 7	10.5
	Examiner 8	10	Examiner 8	10
	Examiner 9	9.75	Examiner 9	9.5
	Examiner 10	9.5	Examiner 10	8.5
	Examiner 11	9	Examiner 11	8.5

n = number of examiners participated in the standard setting process

Table 1 presents the marks given by each examiner for questions 1 and 2. The median for Question 1 is **11** whereas the median for Question 2 is **10.5.**

Table 2. The passing rates of the norm-reference method vs the modified Angof standard setting method

	Norm-reference method	Modified Angof standard setting method
Question 1	93%	72.8%
Question 2	92%	67.5%

The two methods of determining passing mark showed significantly different outcomes in terms of the passing rates. In both questions, the norm-reference method gave significantly higher passing rates. The passing rate using the norm-reference method for question 1 was 93% (106/114) and that by modified Angof method was

72.8% (83/114). For question 2, the passing rate using the norm-reference method was 92% (105/114) and that by modified Angof method was 67.5% (77/114).

Discussion

For the past many years, the examination for undergraduate psychiatry posting in UKM focused on long case format alone and an arbitrary passing mark of 50% was adopted. This has its own limitations. The psychiatric OSCE and standard setting process were an exciting new experience. Results had shown a significant outcome in terms of differences in the passing rates between the previously adopted norm-reference method and the modified Angof standard setting method. This is not surprising since the norm-reference method assumed passing marks without considering any relevant factors such as the cohort of students, level of difficulty of questions, etc. On the other hand, the standard setting procedure has taken into account all the factors mentioned.

There were few limitations that need to be considered in the psychiatric OSCE and the standard setting procedure for the undergraduate examination in UKM. Firstly, psychiatric symptoms are not easy to be simulated compared to other medical signs and symptoms such as chest pain, abdominal pain, etc. [2]. On the other hand, students' performance in OSCE will depend to certain extent on the standardized patients. For example, if the standardized patients simulating as a depressed person do not appear depressed, it will be difficult for the student to show empathy which may be one of the component assessed in the OSCE. Students knew the patient was an SP, therefore could not express their honest and genuine skills. Apart from that, though the

performance of the SPs was meant to be standardized and maintained, the reliability of the SPs might still differ from one SP to another (intra-reliability) and from one student to another (inter-student).

Secondly, a check-list that is too structured and rigid with about fifteen or more anchoring items may make passing easy as it does not allow flexibility in the rating. For example, a student may pass a particular task if he or she asks most items listed in the check-list although the task is done unsatisfactorily since no marks allocated on the global rating or performance. Thirdly, in the standard setting procedure, the senior examiners who have more experience may indirectly influence the junior examiners in deciding on the marks.

Future challenges include improving on the recruitment and selection of SPs, improving the check-list, and changing the mentality of examiners from the old format and adapting to the newly revised examination method.

Conclusion and Recommendations

Despite the limitations, psychiatric OSCE is an improvement to the examination format in the undergraduate psychiatry examination in UKM. Recommendations to further improve it include: (i) recruitment of standardized patients should take into consideration the talent and ability of the person to simulate psychiatric symptoms, and (ii) the check-list should allow some flexibility in the scoring rather than the rigid type of item scoring. Overall performance of the student should also be considered and this can be done by giving marks to the global assessment of function using a likert scale.

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Appendix A – Example of question

Question 1

YEAR 4 SEMESTER 2   **SESSION 2008/2009**

CLINICAL SCIENCE MODULE

INSTRUCTIONS TO CANDIDATE:

You are the medical officer at a psychiatric unit and you are seeing a young man referred by a general practitioner for disturbed thinking.

Please elicit the chief complaints from this patient and the relevant history to help you to arrive at the diagnosis.

You are **not required** to present your findings.

You have 10 minutes to complete the task.

Question2

YEAR 4 SEMESTER 2   **SESSION 2008/2009**

CLINICAL SCIENCE MODULE

STATION

INSTRUCTIONS TO CANDIDATE

A young Malay man came to the psychiatric clinic with the complaint of feeling depressed.

TASK

You are a medical officer in the psychiatric clinic. Please assess suicide risk.

You are not required to present your findings.

You have ten (10) minutes to complete this task.

Appendix B - Example of check-list

Question 1

Checklist for examiner (sample only)

	Items	Maximum scores	Examiner's score
1	Patient was put at ease, comfort and students greet the patient	1	
	Chief complaint		

2	Obsessional thought and compulsive acts
	   1) Cleanliness
	   2) Safety
	   3) Doubt
		2
		2
		2	

3	Exploring the detail of the symptoms
	   1) Frequency
	   2) Duration
		1
		1	

4	Duration of current problem	1	
5	Deterioration in function	1	
6	Family history in mother	1	
	Associated symptoms		
7	Ability to rule out depression and anxiety symptoms and psychotic	3	
	Overall performance		
8	Phrase questions relevantly and systematically Good balance in open and closed ended question	2 1	
9	Empathic listening	2	
	Total	20	

Global Rating (please circle):

Fail	Pass	Good	Excellent

SP Rating (please circle): 1 / 2 / 3

EXAMINER:

Question 2
SEMESTER   SESSION

STATION   STUDENT MATRIC NO:

Checklist For Examiner

	Items	Maximum Score	Examiner's Score
1	Introduce self, polite, greets patient, elicit relevant identification data	1	
	Present Psychiatric History		
2	Main presenting symptom (depressed mood)	1	
3	Associated depressive symptoms for 3 months (insomnia, lack of energy, lost of appetite, lost of weight, feelings of worthlessness, excessive guilt for 3 months)	2	
4	Hopelessness	1	
5	Presence of suicidal ideation/plan	1	
6	Access to highly lethal method –jumping from the 10th floor of his condominium.	2	
7	Reasons for living/protective factor (suicide is a sin, responsibility to family & no final acts)	2	
8	Precipitant of these symptoms (financial stressor)	1	
9	Absence of mania, psychosis, anxiety (current & past)	1	
10	No previous suicide attempt	1	
11	No family history of suicide	1	
12	**Social History**		
13	Previous alcohol abuse & no illicit drug abuse	1	
14	**Interview technique**	1	
15	i) Good balance of open & closed-ended questions	1	
16	ii) Listening to patient attentively	1	
17	iii) Asking questions systematically and emphatically	2	
	TOTAL	**20**	

Global Rating (please circle) :

Fail	Pass	Good	Excellent

SP Rating (please circle) : 1 / 2 / 3

EXAMINER   :

EDUCATION SECTION

MODEL ANSWER FOR CRITICAL REVIEW PAPER: CONJOINT EXAMINATION FOR MALAYSIAN MASTER OF MEDICINE (PSYCHIATRY) AND MASTER OF PSYCHOLOGICAL MEDICINE (MPM), NOVEMBER 2009

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Abstract

Critical review paper is one of the components in the theory examination for master of medicine (psychiatry) and master of psychological medicine part II. Majority of the students find critical review paper is difficult to pass. Thus this article is useful to help them. The paper discussed below is aimed to determine the validity and examine the reliability of the Malay version of Auditory Verbal Learning Test (MVAVLT) for Malaysian population use. They also wanted to determine the level of performance of the test among schizophrenia patients. The data were subjected to the principal component factor analysis (PCA) with varimax rotation using a single factor. Questions for this paper mainly discussed the validity and factor analysis concept. *ASEAN Journal of Psychiatry, Vol.11(1): Jan – June 2010: 128-134.*

CRITICAL REVIEW PAPER: CONJOINT EXAMINATION FOR MASTER OF MEDICINE (PSYCHIATRY) AND MPM, NOVEMBER 2009.

Title of paper: Validation of the Malay version of Auditory Verbal Learning Test (MVAVLT) among Schizophrenia patients in Hospital Universiti Sains Malaysia (HUSM), Malaysia

Journal: ASEAN Journal of Psychiatry, Vol. 10(1), Jan – June 2009: 54 - 74

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SUMMARY OF OBJECTIVE, MATERIALS, METHODS AND RESULTS

This study aimed to determine the validity and examine the reliability of the Malay version of Auditory Verbal Learning Test (MVAVLT) for Malaysian population use and to determine the level of performance of the test among schizophrenia patients in HUSM.

Methods

The subjects were 15 schizophrenia patients conveniently selected from the patients that attended follow up in psychiatry clinic in HUSM or inpatient who have been admitted in the ward during the study period (December 2007 till May 2008) and 15 healthy control subjects as a comparison.
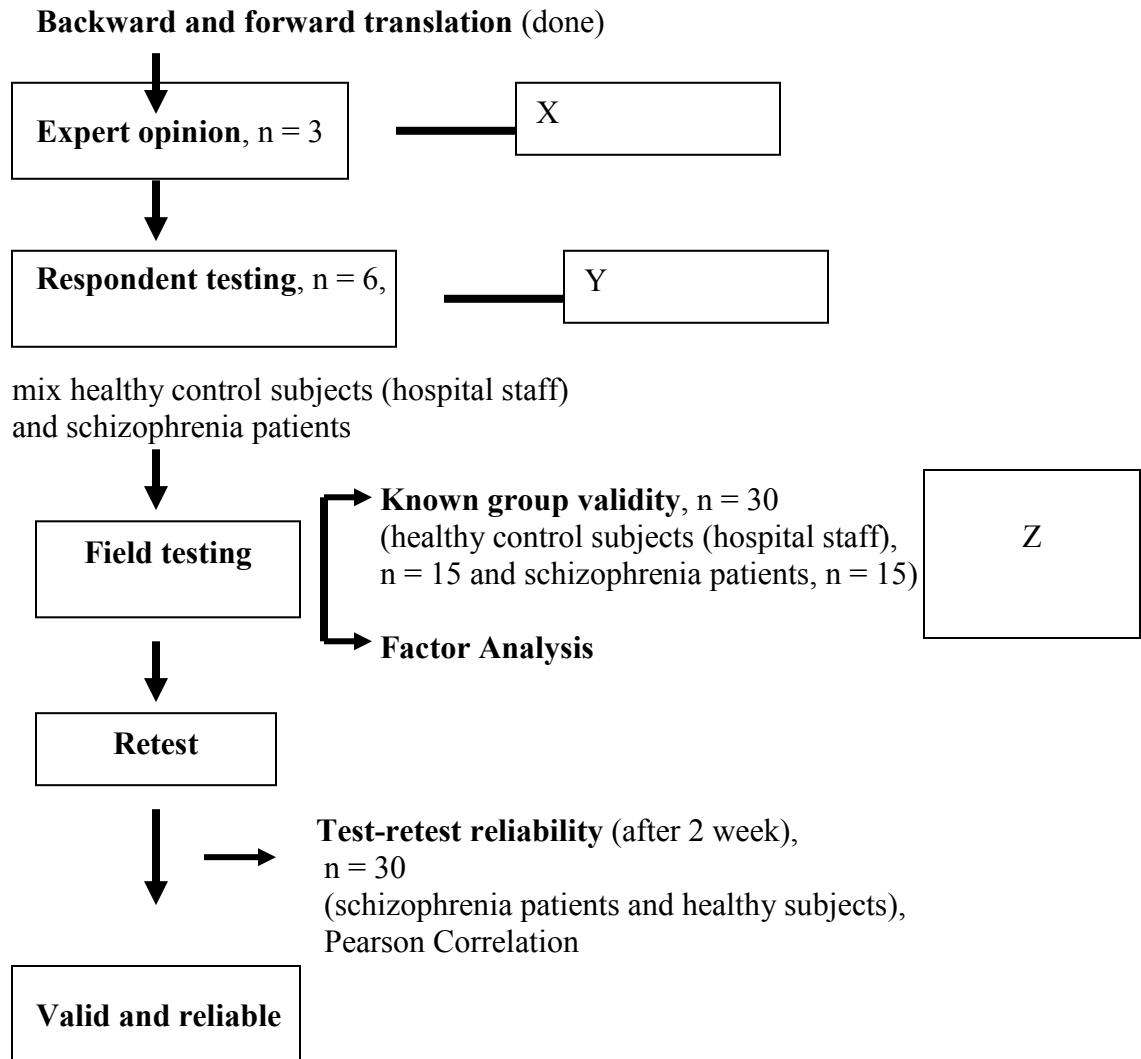
The RAVLT was translated into Malay language using translation and back translation method. The translation process was carried out by a senior lecturer and psychiatrist.

The initial part of the validity of this research was measured by giving the questionnaire to three medical personnel who have experience in using the RAVLT which include two senior lecturers and psychiatrists from the Psychiatry Department and a psychologist and lecturer from Neuroscience Department of HUSM. Both of them agreed with the content of the test. Later, another validity process was measured by giving the test to six subjects who include healthy control subjects and schizophrenia patients who received treatment in HUSM. The hospital staffs served as healthy control subjects and screened for previous psychiatric and neurological disturbances. The test was reassessed and conclusion was made that the test appears to measure what it is supposed to measure and it seem like a reasonable way to gain the information the researches are attempting to obtain. Subsequently, a validity was measured by using factor analysis (FA) and known group validity. Data were subjected to principal component factor analysis (PCA) with varimax rotation using a single factor, as suggested by the previous factor analytic studies.

Test-retest reliability was conducted on 30 subjects including 15 schizophrenia patients conveniently selected from the patients that attended follow up in psychiatry clinic in Hospital Universiti Sains Malaysia or inpatient who have been admitted in the ward during the study period and 15 healthy control subjects. The reason why the healthy control subjects were involved in this phase was because the researcher wanted to get some idea regarding the level of performance of the test in the normal participants and to know whether the test was able to discriminate both of the groups involved. The test was administered by the same interviewer who was trained by the expert and was re-administered again after two weeks interval.

Figure 1. Flow chart of pilot study on validation of Malay Version Auditory Verbal Learning Test (MVAVLT).

Backward and forward translation (done)

Expert opinion, n = 3 ————— X

Respondent testing, n = 6, ————— Y

mix healthy control subjects (hospital staff)
and schizophrenia patients

Field testing

→ **Known group validity**, n = 30
(healthy control subjects (hospital staff),
n = 15 and schizophrenia patients, n = 15)   Z

→ **Factor Analysis**

Retest

→ **Test-retest reliability** (after 2 week),
n = 30
(schizophrenia patients and healthy subjects),
Pearson Correlation

Valid and reliable

Results

Data were obtained from this study, and were subjected to principal component factor analysis (PCA) with varimax rotation using a single factor, as suggested by the previous factor analytic studies. All MVAVLT indexes in this study loaded on the first factor with loadings of 0.66 to 0.98. The results of single factor, factor analysis of MVAVLT for 7 indexes are shown in table 2.

Table 2 : Factor Analysis of MVAVLT.

MVAVLT trials	Factor Loading
A1	**0.834**
A5	**0.944**
Total A1 – A5	**0.975**
B1	0.664
A6	**0.913**
A7	**0.941**
Recognition	**0.818**

Extraction Method: Principal Component Analysis.   a 1 components extracted. % of variance 76.678

Table 3 : Malay Version Auditory Verbal Learning Test (MVAVLT) scores in normal healthy staffs and schizophrenia patients.

MVAVLT trials	Normal healthy staffs (n = 15) Mean (SD)	Schizophrenia patients (n = 15) Mean (SD)	Mean differences (95% CI)
A1	8.5 (2.20)	5.9 (2.09)	2.5 (0.93 — 4.14)*
A5	12.2 (1.78)	8.2 (3.05)	4.0 (2.13 — 5.87)*
Total A1-A5	53.2 (7.72)	34.5 (12.09)	18.7 (11.08 — 26.26)*
B1	5.0 (1.60)	3.3 (1.53)	1.7 (0.56 — 2.91)
A6	11.0 (2.51)	7.1 (3.20)	3.9 (1.79 — 6.08)*
A7 (delayed recall)	11.1 (2.49)	6.7 (2.74)	4.4 (2.44 — 6.36)*
Recognition	14.3 (0.88)	11.5 (2.92)	2.7 (1.12 — 4.35)*

 * Independent samples test is significant at the 0.05 level (2-tailed).

QUESTIONS (Model Answers given below after each questions)

1.   Based on figure 1, name the type (or stage) of validity in each box of X, Y, Z *(3 marks)*

X = Face validity
Y = Content validity
Z = Construct validity (or concurrent)

2.   Based on table 2, factor analysis was done to confirm the validity of the MVAVLT.

a) Briefly outline what is factor analysis (FA)? *(2 marks)*

Factor analysis is a statistical method used to describe variability among observed variables in terms of fewer unobserved variables called **factors**. The observed variables are modeled as linear combinations of the factors, plus "error" terms. The information gained about the interdependencies can be used later to reduce the set of variables in a dataset.

b) Briefly outline your findings in table 2 *(2 marks)*

MVAVLT had a good construct validity, with factor analysis findings (or factor loadings) of 0.66 to 0.98.

c) In this study, give ONE benefit of using FA to measure the validity of MVAVLT? *(2 marks)*

It reduces cultural influences that might be present when RAVLT was translated into its Malay version, considering that the understanding of psychiatric disorders in the West is most probably different from the local population.

"Data were obtained from this study were subjected to PCA with varimax rotation.., as suggested by the previous factor analytic studies." What kind of FA is this? *(1 mark)*

Confirmatory FA

3. (a) What kind of validity that was measured in table 3? *(1 mark)*

Discriminant validity.

(b) What is meant by the below findings (from table 3)? *(2 marks)*

MVAVLT trials	Normal healthy staffs (n = 15) *Mean (SD)*	Schizophrenia patients (n = 15) *Mean (SD)*	*Mean differences (95% CI)*
A1	8.5 (2.20)	5.9 (2.09)	2.5 (0.93 — 4.14)

There was a **significant** difference between the mean of A1 on MVAVLT trials where patients with schizophrenia scored less than the normal healthy staffs (mean of 5.9 versus 8.5), as *p* < 0.01.

(b) Summarize three findings in table 3 *(3 marks)*

The MVAVLT was able to discriminate between healthy control participants and schizophrenia patients **(1 mark)**.

Schizophrenia patients performed significantly worse than healthy controls in all indexes measured in MVAVLT **(1 mark).**

The pattern of the impaired performance in the MVAVLT is suggestive of a primary memory dysfunction because if the memory impairment is due to the secondary consequence of deficits in word generation (verbal fluency), deficits in free recall but not recognition would have been expected. **(1mark).**

4. (i) What is one MAIN limitation of this study? *(1 mark)*

(i) Small sample size, N= 15

(ii) The interval of test-retest from the previous studies were not standardized, which ranged between 2 hours and 1 month. Most of the international studies used a duration between 1 and 2 weeks.

ii) How would you recommend to improve this kind of study in the future? Give <u>3</u> suggestions. *(3 marks)*

(i) Increase sample size
(ii) To standardize the time frame for the test-retest
(iii) To improve the inter-rater agreement

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