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ORIGINAL ARTICLE

PREVALENCE AND ASSOCIATED FACTORS OF PHOBIA AND SOCIAL ANXIETY AMONG UNIVERSITY STUDENTS

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Abstract

Objective: **The objective of this study was to determine the prevalence of the most common phobias and associated factors among university students.** *Methods***: This cross-sectional study was carried out at Management and Science University (MSU). Random sampling was performed throughout all faculties. The questionnaires were distributed randomly at classes, library and university cafe within MSU. Diagnosis of anxiety disorders were established according to DSM-IV criteria. These criteria are included in Liebowitz Social Anxiety Scale (LSAS). The questionnaire consists of two sections. The first section consists of socio-demographic characteristics such as (age, sex, race, type of faculty and income); the second section is LSAS standard questionnaire. Multiple linear regression using backward analysis was performed to obtain the associated factors.** *Results:* **A total number of four hundred sixty eight (468) students participated in this study. The majority of them were older than 20 years old, female, Malay and from non-medical and heath faculties (59.6%, 69.6%, 77.8%, 68.8%; respectively). Regarding history of abuse during childhood, the majority of the university students reported that there was no sexual, physical and emotional abuse during childhood (98.5%, 97.4%, 82.1%; respectively). The majority of the students (53.85%) reported that they have phobia. The highest type of phobia reported among university students was phobia from snake (11.5%), followed by speaking in front of crowd (9.2%) and the lowest were phobia of speed, dolls phobia, ropes phobia. Types of faculty, smoking status and history of physical abuse during childhood were the factors that significantly influence the social anxiety among university students in univariate and multivariate analysis.** *Conclusion:* **The prevalence of phobic symptoms among university students was high types of faculty; smoking status and history of physical abuse during childhood significantly influenced social anxiety among university students. Education and counseling university students is necessary to educate the students who suffer from phobia to cope with different situations during study period.** *ASEAN Journal of Psychiatry, Vol. 13 (2): July – December 2012: 112-121.*

Keywords: Social Phobia, University Students

Introduction

Social phobia is reported to be among the most common anxiety disorders with lifetime prevalence rates ranging from 2 to 16% in the general population and characterized by fear of one or more situations in which a person may be exposed to possible scrutiny by others and fear that he or she will act in an embarrassing or humiliating and fear of negative evaluation.

Sufferers become anxious when they perceive themselves as the centre of attention, finding it difficult to speak in public, attend social events and deal with authority figures [1, 2].

Social phobia usually develops in early adolescence or young adulthood, a period when there is a normal increase in self-consciousness. It tends to impairs productive learning, social interactions, interpersonal difficulties, leading to reduced quality of life, increased number of social fears, increased disability and results in significant distress [3-7].

Any type of mental illness can have a negative impact on cognitive development and learning, and involves a very high cost to both the individual and society. Studies reported that social phobia contributed to medical school dropout [8], deterioration in relationships [9], marital problems and an impaired ability to work effectively [10]. However, researchers also agree that a moderate degree of anxiety may well motivate the student and encourage them towards better academic achievement. Hence, some degree of anxiety is considered a necessity for learning and high academic achievement. The contrary is unfortunately also true, as a high anxiety score may be a severe obstacle to academic achievement.

There are several types of phobias, such as specific phobia which is fear of a single specific panic trigger such as spiders, dogs, elevators, water, flying, catching a specific illness [11]. Another type of phobia is agoraphobia which is characterized by intense anxiety about being in a place or situation from which escape might be difficult or embarrassing in the event of a panic attack. Agoraphobia is commonly associated with panic disorder. 'Medical' phobia is the fear of physical illness, medical tests and procedures.

According to the Diagnostic and Statistical Manual of Mental Disorders [11] 4th Edition (DSM-IV), social phobia, specific phobia and agoraphobia are subgroups of anxiety disorders. Several studies reported the high prevalence of specific phobias in the general population, especially in children [12]. Children's fears differ in nature across different ethnic groups

and culture; beliefs, values and traditions may play a role in their expression. Researchers believe that a combination of genetic and environmental influences results in the emergence and maintenance of social phobia. If left untreated, individuals with social phobia rarely recover.

Increasing attention is being paid to anxiety disorders worldwide because of their common occurrence in primary care settings and in the general population [13] and the degree of disability found in sufferers. The impairment from anxiety disorders is comparable with long term physical illnesses like arthritis, hypertension and diabetes, but then, unlike these illnesses, anxiety disorders have an earlier age of onset and hence a longer duration of ill-health [14]. It is common, with an annual prevalence of 2.7% in Australia [15], but elsewhere in the western world it is higher (3–4%) and has a lifetime incidence of 7–13% [16]. It has significant impact on education and employment, with lower levels of educational achievement and lower incomes [17]. In developing countries 10–44% suffers from depression and anxiety disorders, less than 35% receive medical care and according to an estimate 50.8 million people suffer from major depression [18]. Studies about anxiety among Malaysian university students are lacking. Therefore, the current study aimed to determine the prevalence of the most common phobias and associated factors among university students.

Methods

This cross-sectional study was carried out at Management and Science University (MSU), Shah Alam, Malaysia during the period from September 2011 until January 2012. A total number of 468 students were randomly selected from five different faculties which are Faculty of Health and Life Sciences (FHLS), International Medical School (IMS), Faculty of Business Management and Professional studies (FBMP), Faculty of Information Sciences and Engineering (FISE) and Centre of Foundation Studies (CFS). Inclusion criteria were Malaysian, aged more than 18 years old. The questionnaires were distributed randomly using

simple random sampling at classes, library and university cafe within MSU. Diagnosis of anxiety disorders were established according to DSM-IV criteria. These criteria are included in Liebowitz Social Anxiety Scale (LSAS). The questionnaire consists of two sections. The first section consists of socio-demographic characteristics such as (age, sex, race, type of faculty and income); the second section is LSAS standard questionnaire The protocol of this study was approved by the ethics committee of Management and Science University. Consent was obtained from students before they answered the questionnaire. T-test was used in univariate analysis. Multiple linear regression using backward analysis was performed to obtain the final model. The final model was chosen depending on R^2 and the p value of the model. A p value less than 0.05 is considered significant.

Results

A total number of four hundred sixty eight students (468) participated in this study from all faculties at Management and Science University (MSU), Malaysia. The majority of them were older than 20 years old, female, Malay and from non-medical and heath faculties (59.6%, 69.6%, 77.8%, 68.8%; respectively). The majority of them were from urban areas, with family monthly income less than or equal to 4500 Ringgit Malaysia (RM) and no family history of social anxiety (90.4%, 64.7%, 94.9%; respectively). Regarding lifestyle among the study participants, the majority of them were non-smokers and non-alcohol drinkers (89.7%, 95.9; respectively). Regarding history of abuse during childhood, the majority of the university students reported that there was no sexual, physical and emotional abuse during childhood (98.5%, 97.4%, 82.1%; respectively). Majority of the students (53.85%) reported that they have phobia (Table 1).

Table 1. Socio-demographic Characteristics of the Study Participants (n=468).

Variables	Categorize	Number	Percentage (%)
Age	≤20	189	40.4
	>20	279	59.6
Sex	Male	141	30.1
	Female	327	69.6
Race	Malay	364	77.8
	Non-Malay	104	22.2
*Faculty	Medical and health faculties	146	31.2
	Non-medical and health faculties	322	68.8
Residency	Urban	423	90.4
	Rural	45	9.6
Family monthly income (RM)	≤4500	303	64.7
	>4500	165	35.3
Family history of social phobia	Yes	24	5.1
	No	444	94.9
Smoker	Yes	48	10.3
	No	420	89.7
Consume alcohol	Yes	19	4.1
	No	449	95.9
History of sexual abuse during childhood	Yes	7	1.5
	No	461	98.5
History of physical abuse during childhood	Yes	12	2.6
	No	456	97.4
History of emotional abuse during childhood	Yes	84	17.9
	No	384	82.1

	No phobia	216	46.15
Social phobia	Phobia	252	53.85

*Medical and health faculties such as FHLS and IMS; non-medical and health faculty such as FBMP, FISE and CFS.

Regarding the types of phobias, the most common type of phobia reported among university students was phobia from animals in general (26.1), followed by phobia from snake (11.5%), followed by speaking in front of crowd (9.2%) and the lowest was snow phobia (Table 2).

Table 2. Types of Phobias among University Students (n=468).

Type of phobia	Number	Percentage (%)
Animals such as (Lizard, snake, cats/ cockroaches/spider/bees)	122	26.1
Snake	54	11.5
Speaking in front of crowd	43	9.2
Situations (closed space/height/speaking/funerals/flying)	36	7.7
Cockroach	28	6.0
Other type of phobia	23	4.9
Height	19	4.1
Closed space	19	4.1
Cats	16	3.4
Lizard	11	2.4
Blood	9	1.9
Funeral, corpses	7	1.5
Bees	7	1.5
Spider	6	1.3
Army	3	0.6
Flying	3	0.6
Speed	2	0.4
Dolls	2	0.4
Ropes	2	0.4
Snow	1	0.2
No phobia	55	11.8

Regarding the factors that significantly influence the social anxiety among university students were type of faculty, smoking status and history of physical abuse during childhood (p=0.030, p=0.001, p=0.039; respectively). Other factors did not show any significant influence towards social anxiety such as (age, race, sex, residency, income, family history of social anxiety, alcohol consumption, history of childhood sexual abuse, and history of childhood emotional abuse) (Table 3).

Table 3. Factors Associated with Social Phobia among University Students (n=468)

Variables	Categorize	Mean SD	t	p-value
Age	≤20	2.08±1.24	0.041	0.967
	>20	2.09±1.28		
Race	Malay	2.06±1.25	0.780	0.436
	Non-Malay	2.17±1.31		
Sex	Male	1.97±1.3	1.30	0.194
	Female	2.14±1.2		

Faculty	Medical and health faculties	1.91±1.11	2.03	0.030
	Non-medical and health	2.17±1.32		
Residency	Urban	2.08±1.27	0.37	0.706
	Rural	2.19±1.22		
Income	≤4500	2.12±1.28	0.72	0.464
	>4500	2.03±1.22		
Family history of social anxiety	Yes	2.46±1.56	1.47	0.239
	No	2.07±1.24		
Smoker	Yes	1.52±0.8	3.30	0.001
	No	2.15±1.2		
Consume alcohol	Yes	2.26±1.5	0.61	0.538
	No	2.08±1.2		
History of sexual abuse during childhood	Yes	3.00±1.5	1.92	0.05
	No	2.07±1.2		
History of physical abuse during childhood	Yes	2.83±1.8	2.07	0.039
	No	2.07±1.2		
History of emotional abuse during childhood	Yes	2.21±1.34	1.02	0.312
	No	2.06±1.24		

In multivariate analysis (Table 4), type of faculty, smoking status and history of physical abuse during childhood were significantly associated with social anxiety (p=0.023, p=0.001, p=0.023; respectively).

Table 4. Predictive Model of Social Anxiety among University Students by Multiple Linear Regression (n=468).

Predictive factors	b	SE	Beta	*p*- value
Constant	1.943			
Faculty				
Medical	Ref.	Ref.	Ref.	
Non-Medical	0.284	0.125	0.104	0.023
Smokers				
No	Ref.	Ref.	Ref.	0.0001
Yes	-0.705	0.191	0.169	
History of childhood physical abuse				
No	Ref.	Re.	Re.	
Yes	0.830	0.365	0.104	0.023

F=7.3 p=0.0001 R^2=0.45

Discussion

The present study focused on anxiety level and its associated factors among university students in Malaysia. Anxiety and depression were ranked first and third as presenting problems among university students and previous studies suggest high rates of psychological morbidity, especially depression and anxiety, among university students all over the world [19-22].
The prevalence of anxiety in this study among university students was 53.85%. Similar finding was reported by Khan et al. (2006) [23] which found that there was a high prevalence of

anxiety and depression (70%) among students. Inam et al. (2003) [24] found that 60% of students suffered anxiety and depression. This may due to several factors such as unfamiliarity with a university environment for first-time students, first time that students were away from their family, dissatisfaction with the course of study that they had registered for, inability to adjust among other students and insufficient income.

Social phobia is a heterogeneous disorder, and various subgroups of patients who exhibit social-evaluative fears in different situational contexts have been described in the literature [25-30].

Some patients report fears that are limited to one or more performance situations (e.g., speaking or writing in front of others), while others experience a broader array of social fears that often include fears of social interaction (e.g., meeting new people, attending parties, or talking to people in authority).

Similarly reported in this study, the highest type of phobia reported among university students was phobia from animals in general (26.1), followed by phobia from snake (11.5%), followed by speaking in front of crowd (9.2%) and the lowest was snow phobia. Similar findings reported by a study from Qatar reported that the most commonly reported phobias among children and adolescents were social phobia, agoraphobia, specific phobia and medical phobia [31]. Izgic et al. (2004) [32] found the one year prevalence of social phobia in university students to be 7.9% and life-time prevalence to be 9.6%. Studies in different countries have placed the prevalence of social phobia in the range of 5% to 8%, making it the most common anxiety disorder and one of the most common psychiatric disorders. In another study agoraphobia was found to be the second most common phobia with a prevalence rate of 8.6%. Agoraphobia is a generalized fear of leaving home or a familiar 'safe' area, and of possible panic attacks that might follow. The study findings revealed that the sample had such fears and the prevalence increases with age. Agoraphobia was significantly more prevalent in

the 16-18 years age group than in the 6-11 age group (11.7%; vs.5.6%, p=0.002) [31].

This study showed that more females than males suffer from social anxiety. There was no gender difference in the prevalence of social phobia in this study, a finding similar to studies of college students in other countries [32]. Similarly, the National Co-morbidity Survey carried out on over 8,000 respondents in the United States, a general health care survey looking at 405 attendees in France and a population study in the Netherlands found higher rates of social phobia in females [4, 3, 6]. Similar study reported that phobias were more prevalent in female students (21.9%) than in males (16.8%), with a female to male sex ratio of 1.3:1 which is similar to other epidemiologic studies that have observed a higher frequency among females [33]. Explanations proposed for the higher rates in older females are that social expectations of gender behaviour accept and reinforce social inhibition in females while males are pushed to mask or seek treatment to overcome it [34, 35]. Findings of this study agreed with the findings of other studies which found that females suffered a higher level of anxiety or social anxiety [36-38]. Conversely, some studies demonstrated higher lifetime prevalence rates for social phobia [39] and obsessive compulsive disorders (OCD) [40] in men as compared to women. Some other studies reported no significant differences with regard to anxiety among female and male students [23, 24]. The possible reasons for high female anxiety are explained by Verbuegge (1985), [41] namely that females are more likely to report concerns about the volume and complexity of the study material they have to cover, they are more likely to report stress due to self-expectations and a feeling of lack of competence, and women tend to over-report medical and psychological symptoms. The other possible reason may be due to physiological factors and the sex roles of women in social and interpersonal relationships. Female physiology entails that women go through hormonal changes and that they may experience problems in the reproductive age, or when they reach menopausal status in their life. Women are at risk of mental disorders due to the

robust effect of biological factors or because of greater social inconveniences.

In this study, smoking significantly influences the social anxiety among university students. A study by Coogan et al. (1998) [42] reported that younger children may smoke to cope with anxiety and depression. Clinical studies have shown a higher frequency of smoking among psychiatric patients than among control groups [43]. Psychiatric predictors of initiation of smoking include use and abuse of alcohol and other drugs, major depressive disorder, anxiety disorders, adult attention deficit hyperactivity disorder and bulimia/binge-eating [43-45]. Sonntag et al. (2000) [46] investigated associations between social anxiety disorder and smoking behavior in order to explore whether social anxiety predicts the onset of cigarette smoking, regular smoking and the development of nicotine dependence. These investigators performed a cross-sectional retrospective baseline analysis and a prospective- longitudinal survey during a 4-year follow-up. Social anxiety disorder was significantly associated with nicotine dependence in both cross-sectional retrospective and prospective-longitudinal analyses. Some literature evidence supports a close relationship between social anxiety disorder and nicotine dependence and the co-morbidity of both disorders with alcohol abuse/dependence.

Regarding childhood abuse, it has been associated with psychiatric disorders such as depression and anxiety disorders [47-50].

Limitations of this study are that the sample was limited to undergraduates and therefore cannot be inferred to the general population and the cross-sectional design limits any causal inferences. However, this is the first study describing social phobia among university students in Malaysia.

Recommendation

The high prevalence of phobia among university students needs education about social phobia and its impact and for the development of more widely available treatment resources for persons

with social phobia. Thus, early diagnosis of first social anxiety symptoms may assist in the prevention of more severe psychiatric symptoms. The study findings are of interest and national study should investigate, in a more detailed manner, the pattern of risk factors associated with phobias in children.

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ORIGINAL ARTICLE

CORRELATES BETWEEN INSOMNIA, PSYCHOLOGICAL DISTRESS AND DAYTIME SLEEPINESS OF MALAYSIAN ADULTS WITH SYMPTOMS OF INSOMNIA

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Abstract

Objective: **The objective of this study is to identify the correlation between psychological factors and insomnia and the impact of insomnia on daytime sleepiness.** *Methods and Results:* **The participants were recruited through convenient sampling and consist of 173 working adults in Georgetown, Penang, aged 20 to 60 years. Participants completed the General Health Questionnaire (GHQ), Athens Insomnia Scale (AIS) and Epworth Sleepiness Scale (ESS). The results revealed that the prevalent of insomnia was 34.7%. There was a positive correlation between psychological distress and insomnia $r = .481$, $p < .001$ and also a positive correlation between insomnia and daytime sleepiness $r = .334$, $p < .001$.** *Conclusion:* **It is concluded that psychological distress typically causes sleep difficulties, and sleep deprivation leads to daytime sleepiness.** *ASEAN Journal of Psychiatry, Vol. 13 (2): July – December 2012: 122-127.*

Keywords: Insomnia, Psychological Distress, Daytime Sleepiness

Introduction

Insomnia is one of the most common sleep problems. According to the fourth edition of the Diagnostic Statistical Manual of Mental Disorders [1], symptoms of insomnia include difficulty initiating sleep and maintaining sleep, non-restorative sleep and impairment of the daytime functioning. According to World Health Organization [21] sleep problem is one of the most common complaints in general and mental health settings. It was estimated that over 20% of adults in the general population

experience insomnia, and more women experience insomnia than men [1].

Evidence has accumulated on measuring the high prevalence of insomnia among adults in the general population. According to Ohayon [13], the range of insomnia reported in the general population was between 10 to 40%. Studies in Malaysia [6,22] on sleep disorders suggested that the prevalence of insomnia was more than 20%, which is within the reported range of 10 to 40%. Psychological problems contribute to insomnia [21]. The findings of previous studies on insomnia from various countries revealed that

psychological factors are believed to influence insomnia [8,9,10,19]. In the present study, psychological dimensions measured are depression, anxiety and somatic symptoms. WHO [21] reported that various mental disorders such as major depression and nocturnal panic attacks may lead to insomnia. General anxiety causes increased autonomic arousal and worry, and this is followed by sleep problems [1]. DSM-IV-TR [1] has also alerted clinicians that somatic symptoms may be related to sleep complaints. Lack of sleep or any difficulty in sleep at night increases the chance of sleepiness in the daytime. A major consequence to poor quality of sleep is daytime sleepiness [21]. The risk factors of being deprived of sleep are increased sleepiness in the daytime, feeling unrefreshed, tired and fatigued, irritable, less motivated, high absenteeism at work, impaired mood and difficulty in concentrating in daily tasks [21].

The objectives of this current study were to identify the association between insomnia, psychological distress and daytime sleepiness of Malaysian adults with symptoms of insomnia.

Methods

The participants were 173 working adults aged 20-60 from Georgetown, Penang. They were recruited with the use of convenient sampling method and recruited from various government and private organizations and NGO offices. The management of the work places and the participants were explained about the objectives of this study. With the approval from the management staff, informed consent was obtained from the employees who were interested and able to complete the self-report instruments. Out of the 173 participants who took part, 56 were Malay, 72 were Chinese, 36 were Indian and 9 participants were of other races. There were 70 male participants and 103 female participants. Exclusion criteria include individuals who experience chronic illnesses, inability to give informed consent and inability to complete self-report instruments.

All the self-report questionnaires were bilingual (Malay and English). The translation of all the scales to Malay language was done by the researcher and checked and approved by the main supervisor. The first part of the questionnaire was on demographic background such as age, gender, race, marital status, and occupation. Psychological distress was measured with the use of General Health Questionnaire (GHQ28), which consists of 28 items. GHQ was developed by Goldberg in 1972. There are 4 sub-scales: severe depression, anxiety, somatic symptoms and social dysfunction. In the present study, only 3 of these subscales were used (severe depression, anxiety and somatic symptoms) and the total number of items were 21. These sub-scales were used because these psychological factors are more relevant to insomnia [1,5,7,9,10,14,19]. The scoring was based on the multiple response scale ranging from 'less than usual' to 'much more than usual'. The score given was 0,0,1,1. This method of scoring is called 'GHQ' score after the name of the questionnaire. The reliability of GHQ (28) by Cronbach's alpha for this present study was 0. 899.

Daytime sleepiness was measured by the Epworth Sleepiness Scale (ESS). The ESS consists of 8 items, with a 4-point scale (0-3). A total score of 10 or higher suggests excessive daytime sleepiness and indicates a sleep disorder. The reliability of this scale by Cronbach's alpha was 0.737.

Insomnia was measured by the use of Athens Insomnia Scale (AIS) by Soldatos in the year 1995. AIS consists of 8 items measuring insomnia symptoms as suggested by the International Classification of Diseases (ICD-10). The reliability of this scale reported by Soldatos, Dikeos and Paparrigopoulos [16] was α 0.89. The reliability of this scale for present study was α .823. The score of the AIS was rated on a 0-3 scale (0 corresponding to "no problem at all" to 3 "very serious problem"). The total score ranges from 0 to 24. A total score of 6 or higher indicates insomnia symptoms.

Results

Table 1. Demographic Characteristics of the Respondents

Demographic information	Number of respondents	Those with insomnia symptoms (%)
Age group		
20-29	54	26 (48.1)
30-39	51	14 (27.5)
40-49	39	18 (46.1)
50-60	29	2 (6.9)
Gender		
Male	70	20 (28.6)
Female	103	40 (38.8)
Marital Status		
Single	72	25 (34.7)
Married	95	32 (33.7)
Divorce	5	3 (60)
Widow	1	0
Race		
Malay	56	20 (35.7)
Chinese	72	22 (30.5)
Indian	36	15 (41.7)
Others	9	3 (33.3)

Prevalence

Out of 103 participants, 60, (34.4%) had insomnia symptoms. A higher percentage of females experienced insomnia symptoms compared to males. Forty females (38.8%) complained of insomnia whereas 20 males (28.6%) had such complaints. Thirty-nine respondents (46.1%) respondents of the 40-49 age group reported experiencing insomnia symptoms, and 26 (48.1%) of the 20-29 age group reported insomnia symptoms. These two groups showed higher percentages of insomnia symptoms compared to the 30-39 and 50-60 age groups . Between married and single respondents, there was no big difference in the percentage of individuals who experienced insomnia (34.7% of singles and 33.7% of married). T-test results did not show any significant mean differences in insomnia symptoms for demographic backgrounds such as gender, marital status, age groups and races.

Table 2. Means, Correlations and Significance Values of Psychological Distress, Daytime Sleepiness and Insomnia Symptoms

	M (SD)	r	p value
Insomnia symptoms	4.39 (3.62)		
Psychological distress	1.89 (2.92)	.481**	.001
Depression	.34 (1.09)	.356**	.001
Anxiety	.91 (1.60)	.438**	.001
Somatic	.93 (1.59)	.419**	.001
Daytime sleepiness	6.91 (3.62)	.334**	.001

** $p < .001$ (two-tailed)

Psychological distress and daytime sleepiness

Results in Table 2 shows that there was a positive correlation between psychological distress and insomnia symptoms, $r = .481$, $p < .001$. All three domains (depression, anxiety and somatic symptoms) were positively correlated with insomnia symptoms. There was a positive correlation between insomnia and daytime sleepiness, $r = .334$, $p < .001$. Sleepiness was reported by 18.3% of the individuals who experienced insomnia.

Discussion

The results of this study found that the prevalence of insomnia was 34.7%. More females experienced insomnia symptoms compared to males (38.8% vs. 28.6%). Typically insomnia symptoms increase with age. Forty-six percent of middle-aged adults (40-49 years old) had insomnia symptoms. Surprisingly a high percentage (48%) of young adults (the age group of 20-29) experienced insomnia symptoms. It was likely that they were experiencing multiple stressful life events which affected their sleep pattern. Larger studies on general populations reported prevalence of insomnia from 10% - 40% [13]. According to Hussain, as cited in Tee [18], 10 to 35% of the world populations including Malaysia experience a few types of sleep disorders.

The most important finding was that psychological distress was the key determinant of insomnia as it was positively related with insomnia and this is consistent with the findings of previous studies [8,10,11,12,14,15]. A logical explanation to this might be stressors in life which affect psychological health. However, the stressors were not identified nor measured in this study. Theories developed on insomnia suggested that psychological stress is a major predisposing or precipitating factor for sleep disorder [5,13]. Models of stress and coping skills have suggested that daily hassles, environmental stressors and role strains, while in the absence of coping strategies, may affect psychological equilibrium.

Even though empirical studies found a consistent association between life stress and distress (e.g., depressive symptoms), the function of psychosocial resources as intervening factors to stressor-distress paradigm still remains an open question [20]. Individuals who experience insomnia reported higher numbers of stressful life events prior to the onset of their sleep problem compared to individuals who do not complain of insomnia [3]. This implies that reducing psychological distress and developing coping mechanisms in managing life may help to improve insomnia.

The present study also found that insomnia was positively correlated with daytime sleepiness. Experiencing sleep deprivation either totally or partially results in daytime sleepiness. Sleep deficiency has a negative impact on physical and cognitive performance. American Sleep Association [2] demonstrated that too little sleep causes drowsiness and difficulty to concentrate on activities the next day. Daytime sleepiness diminishes daytime functioning, it is also a risk factor for accidents on the road and at the work place. As daytime functioning diminishes, this may cause great difficulties in social life, as it may affect the enjoyment with family members, performance at the work place and also social interaction with friends.

Seeking professional help from physicians, counselors and other healthcare professionals will help the individuals recognize possible factors associated with insomnia. When they do not consider it as a health problem, very few people seek treatment from healthcare professionals. Since sleep problems are underreported and underdiagnosed, healthcare professionals should be proactive in probing about insomnia experienced by their patients.

Acknowledgements

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ORIGINAL ARTICLE

PSYCHO-BEHAVIOURAL FACTORS CONTRIBUTING TO TRUANCY AMONG MALAY SECONDARY SCHOOL STUDENTS IN MALAYSIA

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Abstract

Objective: Truancy is a disciplinary problem, which frequently occurs among school students and it has many contributory as well as inter-related factors. It is a growing problem in this country and it often becomes a prelude to other delinquent behaviours. The study objective is to determine the prevalence of truancy as well as factors related to it including psycho-behavioural factors. *Methods:* A cross-sectional study involving 556 Malay student's selected using multi-stage sampling was conducted. *Results:* The overall prevalence of truancy is 30.2%. The predictors to truancy are age, students who frequenting entertainment centre, students who have not completed Quran recital, coping strategies using problems solving methods and time spent watching television/video. There is a significant association between truancy and psycho-behaviour such as watching video/internet pornography, frequenting entertainment centre, smoking, motorcycle racing and dating a special friend. *Conclusion:* Truancy is a social issue, which must be given serious attention by all concerned components of the society. *ASEAN Journal of Psychiatry, Vol. 13 (2): July – December 2012: 128-137.*

Keywords: Truancy, Malay Students, Coping Strategies, Delinquent Behaviours

Introduction

Playing truant is one of the disciplinary problems with highest rate among school students. Truancy, as defined by the Federal Territory Education Department of Kuala Lumpur is not attending school on official school days without reason or without written reasons from parents or guardians or medical doctors [1]. According to a report the rate of truancy in year 2003 was 0.86%; with criminal behaviour (0.24%), obscene behaviour (0.03%), destructive behaviour (0.04%) and dishonest behaviour (0.02%) [1]. Those who manifested delinquent/ high level of aggressive behavior were more than twice at risk than other children to develop drug use disorder [2]. In year 2003, 43,421 students played truant from school and this number has increased 25% compared with the number of truancies in year 2000, which was 34,613. This trend is worrying and if steps are not taken to put a stop to it, this problem will evolve into a future menace to society.

Several studies conducted in Malaysia showed the truancy rate among students is at a critical stage, between 20 and 40%. According to a study of high risk Form 1 teenagers in Federal

Land Development Authority (FELDA) settlements in Perak, Johor and Pahang, the prevalence of students who have played truant from school is 41.4% [3]. Another study conducted among students from high risk schools in Kuala Lumpur showed the prevalence of playing truant is 21.2% [4]. In the United States of America and Britain, the prevalence of playing truant in the past 20 years is between 3 and 19% [5]. A study in Cologne, Germany which classifies truancy as students being absent without reason for more than five times in the previous year, showed a truancy prevalence rate of 7.9% [6].

Truancy is also a precursor to other negative behaviour such as delinquency or criminal activities. The Los Angeles Education Department reported that chronic truancy problem is a strong indicator that may lead towards delinquent behaviour. Students who play truant are also at high risk to be involved with drug abuse, alcohol dependency or violence [7].

A multi-dimensional array of inter-related factors contributes towards truancy in school. Many previous studies show that truancy increases in parallel with students' age [8]. Truancy increased exponentially among students in the range of 12 to 16 years in Christchurch, New Zealand where truancy rate among 16-year-old students was 10 times that of 12-year-olds [9]. The prevalence of truancy is also higher among male students [10]. Where socioeconomic status is concerned, previous studies show there is a strong association between truancy and low socioeconomic status [11, 12].

Families also play a contributory role towards truancy. Lack of parental attention and supervision, parents who are disciplinarians and unpredictable, no involvement in children's activities, anti-social parents and also large families are among the important contributing factors towards students' truancy [13]. Truancy cases are also related to single parent families, deceased or absent parents and parents' low educational level [14].

Where the individual is concerned, truancy is related to low academic performance in school [14, 15]. Smoking is also a strong predictor towards truant behaviour in school. In addition, drug abuse is also related to truancy [7, 16]. A high score for teenage psychological problems also has connections with school truancy [14]. Truant students are found to have higher mean scores for internalizing and externalizing symptom [17].

Coping strategies are defined as cognitive and behavioural efforts by a person to deal with extreme internal and external desires [18]. Teenagers in the high-risk group have a lower mean score for coping via problem solving. This means teenagers in this group use less problem solving strategies but prefer to use coping strategies, which are non-productive [19].

School factor plays a major role in influencing truancy behaviour. There is an association between truancy and students' attitude of disliking school, having a low academic achievement target and being unsure about the importance of school [20]. There is an association between truancy and low score of students' opinion about school, the academic staff and students' social abilities in class [15]. The influence of media towards children and teenagers is strong due to their immaturity in understanding what they watch on television. Delinquent students are more easily influenced by what they watch and more easily imitate what they see on television [21].

The objective of this research is to determine the prevalence and factors, which contribute to truancy among Malay secondary school students in Malaysia.

Methods

This cross-sectional research was carried out in Kajang, Selangor, Malaysia from the June 2007 until October 2007 and involved 556 Malay students of Form Two and Four in two non-residential secondary schools. Using multi-stage random sampling, Kajang was chosen from five zones in the district of Hulu Langat. Two schools from six non-residential secondary

schools were selected. In these two schools, nine Form Two classes and 9 Form Four classes were chosen at random. From these classes, total of 556 Malay students were selected according to the inclusion and exclusion criteria as research samples.

Data collection was done via questionnaires and pilot testing was conducted before the actual administration of the questionnaires. The questionnaire consists of five sections namely respondent's biodata, family background, individual factor, school and environmental factors. The 18 items Adolescent Coping Scale (ACS) [22] was used to determine coping strategies and Hatta Islamic Religiosity Scale (HIRS) [23] to measure the religious status.
In this study, truancy was defined as not attending school on official school days without valid reason or written or verbal reasons from the parents, guardians or medical doctors. The non-attendance must be of three consecutive days or more or ten days or more if not consecutively within a period of six months from the January until June 2007.

Data were analyzed using the SPSS version 13.0 software. The Chi Square Test was used for dependent categorical variable while the Mann Whitney U Test was used to compare medians for quantitative data, which is not distributed normally. Multivariable analysis was used to determine the adjusted odd ratio for truancy with the independent variable.

Results

From the descriptive analysis, 51.3% of the respondents were female students, 50.2% Form Four students and 49.8% Form Two students. The overall prevalence of truancy is 30.2% where the prevalence of truancy among male respondents is higher, that is 35.4% compared with female respondents, which is only 25.3%. The prevalence of truancy among Form Four respondents is higher, that is 41.9% compared with Form Two respondents, which is only 18.4% (Table 1). The is no significant association between gender and truancy, however students aged 16 years (Form Four) are four times more likely to play truant (AOR = 3.56; 95% CI = 2.25-5.65).

Table 1. Socio demographic characteristics of the respondents.

	Truant		Prevalence OR (95%CI) p value	Adjusted OR (95%CI)
	Yes	**No**		
Sex #				
Male	96 (35.4%)	175 (64.6%)	1.62	0.89
Female	72 (25.3%)	213 (74.7%)	(1.13- 2.34)	(0.54-1.47)
Age (Class)#				
16 years (Form 4)	117(41.9%)	162 (58.1%)	3.25	3.56
14 years (Form 2)	51 (18.4%)	226 (81.6%)	(2.18-4.71)	(2.25-5.65)
Total Family income Median (IQR)	(n=161) 2000 (1150-4000)	(n=379) 3000 (1500-5500)	*p<0.001	
Mother's education Not schooling / Primary School Secondary School College/ university	(n=132) 10 (38.5%) 88 (32.7%) 34 (20.4%)	(n=330) 16 (61.5%) 181 (67.3%) 133 (79.6%)	**p= 0.003	

Father's education				
Not schooling / Primary School	9 (60%)	6 (40%)	**p= 0.004	
Secondary School	67 (31.8%)	144 (68.2%)		
College/ university	55 (24%)	174 (76%)		
Marital status#				
Single	24 (42.1%)	33 (57.9%)	1.79	1.66
Married	144 (28.9%)	355 (71.1%)	(1.02-3.14)	(0.87-3.19)
No of bedrooms #				
Less than 3	36 (42.6%)	49 (57.6%)	1.89	1.44
More or equal to 3	132 (28%)	33 (72%)	(1.17-3.03)	(0.82-2.52)

Truant, n=168; Non truant, n=388; unless stated in table

* Mann-Whitney U test

** *p*, level of signicant for trend

In socioeconomic status, it was found that the median of family income of truant students is lower at RM2000 (IQR=1150-4000) compared with those of non-truant students at RM3000 (IQR=1500-5500) (p< 0.001). Parents' educational level has a significant association with truancy. There is a pattern which shows the lower the parents' educational level is, the truancy percentage is higher with a value of p=0.003 (mother) and p=0.004 (father) (Table 1). There is also a significant association between marital status and truancy. The respondents with single parents are twice more at risk to be involved with truancy (POR 1.79; 95% CI 1.02- 3.14). There is also an association between the numbers of bedrooms with truancy rate. The percentage of truancy is higher (42.6%) among respondents who live in homes which have less than three bedrooms, compared with those who live in homes (28%) with three or more bedrooms (POR 1.89; 95%CI 1.17-3.03).

The median score of interaction for the truants' mothers is 25 (IQR = 21 - 29), significantly lower than the mothers of non truants; 26 (IQR = 23 - 29). However no significant difference was found between the fathers (Table 2). For academic performance, the truants' academic achievement is lower than the non-truant (AOR 1.54; 95%CI 1.07-2.22).

Table 2. Comparison of the parental interactions, academic performance, coping strategies and religiosity between the truant and non truant respondents.

	Truent		**Prevalence odds ratio (95% CI), *p*-value**	**Adjusted OR (95%CI)**
	Yes	**No**		
Interactions score (mother)	(n=165)	(n=387)		
Median (IQR)	25 (21-29)	26 (23-29)	*p=0.015	
Interactions score (father)	(n=163)	(n=378)		
Median(IQR)	23(20-27)	24(20-27)	*p=0.413	
Academic performance				
Poor	86 (35.4%)	157 (64.6%)	1.54 (1.07-2.22)	1.34 (1.02-2.08)
Good	82 (26.2%)	231 (73.8%)		

Coping strategies#				
Problem solving				
Seldom used	156 (31.9%)	333 (68.1%)	2.15 (1.12-4.12)	2.11 (1.00-4.42)
Always used	12 (17.9%)	55 (82.1%)		
Referring to others				
Seldom used	112 (29.4%)	269 (70.6%)	2.68 (1.87-3.83)	2.21 (0.85-4.52)
Always used	56 (32%)	119 (68%)		
Non productive coping				
Seldom used	156 (30.2%)	360 (69.8%)	1.01 (0.50-2.04)	0.73 (0.33-1.87)
Always used	12 (30%)	28 (70%)		
Quran recital				
Incomplete	96 (38.4%)	154 (61.1%)	2.03 (1.40-2.92)	1.83 (1.20-2.80)
Complete	72 (23.5%)	234 (76.5%)		
Islamic Religiosity Index (IRI)				
Median (IQR)	30.6 (27.9-33.6)	31.4 (29.2-34.0)	*p=0.005	

\# Truant, n=168; Non-truant, n=388; unless stated in table

* Mann-Whitney U test

There is no significant association between emotional disturbances such as stress, depression and anxiety with truancy. For coping strategy, problem solving strategy shows significant association with truancy. Those who seldom utilized problem solving method, the truancy percentage is higher compared with those who frequently used problem solving method (AOR = 2.11, 95% CI = 1.00-4.42). Coping strategies which involved consulting other people and nonproductive ways did not show any significant association with truancy in the multivariable analysis (Table 2). Religious status was measured using the Islamic Religiosity Index (IRI) score. This score was obtained from questions on knowledge about Islam, Islamic practices, the practice of Quran recital as well as actions to do good and curb bad deeds. IRI median score of truants was lower compared with non truants (p= 0.005) (Table 2). Those who did not complete their Quran recital are more likely to play truant than those who completed (AOR 1.83; 95%CI 1.20-2.80).

There is a significant association between truancy and involvement with high risk behaviour such as watching videos/internet porn (POR = 2.22; 95% CI =1.42-3.46), frequenting entertainment centres (AOR = 2.40, 95% CI = 1.40 - 4.10), dating a special friend (POR = 1.52; 95% CI = 1.03-2.23), fighting / bullying (POR = 1.56; 95% CI = 1.01-2.41), motorcycle racing (POR = 2.78; 95%CI = 1.43-5.40), smoking (POR = 2.54; 95% CI = 1.73-3.74) and hours watching TV/ video more than 15 hours per week (AOR = 2.24; 95% CI = 1.46-3.45) . On the other hand, there is no significant association between truancy and drug abuse, glue-sniffing, alcohol consumption, vandalism and stealing (Table 3).

Table 3. Comparison of various anti-social activities between truant and non truant respondents.

Anti-social Activities	Truant		Prevalence OR (95% CI)	Adjusted OR (95%CI)
	Yes	No		
Pornography				
Yes	45 (45%)	55 (55%)	2.22(1.42-3.46)	1.26 (0.72-2.21)
No	123 (27%)	333 (73%)		

Drug abuse				
Yes	2 (50%)	2 (50%)	2.33 (0.33-16.65)	-
No	166 (30.1%)	386 (69.9%)		
Glue sniffing				
Yes	0 (0%)	3 (100%)	NA	-
No	168 (30.1%)	385 (69.6%)		
Consuming alcohol				
Yes	0 (0%)	1 (100%)	NA	-
No	168 (30.3%)	387 (69.7%)		
Frequenting entertainment centre				
Yes	82 (48.8 %)	86 (51.2%)	3.35 (2.28-4.93)	2.40 (1.40-4.10)
No	86 (22.2%)	302 (77.8%)		
Dating special friend				
Yes	61 (36.5%)	106 63.5%)	1.52 (1.03 - 2.23)	0.79 (0.49-1.30)
No	107 (27.5%)	282 (72.5%)		
Vandalism				
Yes	10 (32.3%)	21 (67.7%)	1.11 (0.51-2.40)	-
No	158 (30.1%)	367 (69.9%)		
Fighting / bullying				
Yes	43 (38.1%)	70 (61.9%)	1.56 (1.01-2.41)	1.08 (0.63-1.85)
No	125 (28.2%)	318 (71.8%)		
Gangsterism				
Yes	10 (38.5%)	16 (61.5%)	1.47 (0.65-3.31)	-
No	158 (29.8%)	372(70.2%)		
Stealing				
Yes	21 (37.5%)	35 (62.5%)	1.44 (0.81-2.56)	-
No	147 (29.4%)	353 (70.6%)		
Motorcycle racings				
Yes	20 (52.6%)	18 (47.4%)	2.78 (1.43-5.40)	1.61 (0.71-3.68)
No	148 (28.6%)	370 (71.4%)		
Smoking				
Yes	73 (44.8%)	90 (55.2%)	2.54 (1.73-3.74)	1.09 (0.63-1.91)
No	95 (24.2%)	298(75.8%)		
Hours watching TV/video More than 15 hours per week	114 (38.0%)	186 (62.0%)	2.29 (1.16-3.35)	2.24 (1.46-3.45)
Less than 15 hours	54 (21.1%)	202 (78.9%)		

* Mann-Whitney U test

NA- Not available

Discussion

This study found that the prevalence of truancy among Malay students in Malaysia is 30.2%. A study conducted by Noor Hidayah et al. (2004) on Form One students in a high risk FELDA area in the states of Perak, Johore and Pahang showed that the prevalence of truancy among the students is higher at 41.4%. Another study conducted by Nik Ruzyanei in 2006 on truancy

in three high risk schools in Kuala Lumpur recorded a lower prevalence of truancy at 21.6%. The differences in prevalence could be due to the different population background and geographical area. Comparing with studies conducted overseas, they show higher prevalence of truancy. The truancy rate in the United States and Britain in the past 20 years is between 3% and 19% [5]. In Swaziland, prevalence of truancy is 21.6% with male students show higher prevalence at 27.4% compared to 17.9% among female students [10].

Truancy also more frequently occurs among Form Four respondents as compared with Form Two respondents. This shows in secondary schools the prevalence of truancy increases with age. This study is similar to the one conducted among 12 to 16 year old cohorts in Christchurch, New Zealand which showed the truancy rate among students increased exponentially among students aged 12 to 16 years old. Truancy percentage of 16 year old students is 30.2%, ten times that of 12 year old students, which is only 3% [9].

In terms of gender, the results showed significant difference. Male are twice more prone to truancy compared to female though it is not significant in the multivariable analysis. This is similar with the study conducted in Africa and Germany which showed a strong association between gender and truancy [5, 24].

Where family socioeconomic status is concerned, truants show a lower median than non truants. This is similar to other studies that showed that truant students usually originate from low socio economic families [11, 12, 25]. Parents' educational level also showed significant association with truancy. The lower the parents' education level, the higher the percentage of students who were involved in truancy. This association has been proven by Miller & Plant in 1999 that truancy was correlated to parents' low education level. Perhaps when the education level of the parents is low, their children do not see the importance or not given enough emphasis on school education.

Parents' marital status also plays a role in truancy. The respondents whose parents are single are almost twice more at risk to be involved in truancy. This is similar to the study carried out on 15 and 16 year old students in the United Kingdom which revealed significant association between truancy and students with single parents or students who did not have parents any more [14]. A study of delinquent students in Malaysia also showed a significant association between delinquent behaviour and divorced parents [21]. Interaction with the mother seemed to be an important factor as it is lower among truants as compared with those of non-truants. Studies in Ontario, Canada showed that truant students have an experience of family conflicts and do not have close relationships with their families [15].

Similar findings found for academic achievement and truancy. Many other studies show that students who are low achievers prefer to play truant from school. They lag behind in their studies and therefore achieve poor results. Studies done in Ontario, Canada and Johore, Malaysia have shown a significant association between truancy and low academic achievement [15, 25]. A study in Edinburgh, United Kingdom found that truancy is a strong predictor of low academic achievement [14].

Religious status as examined in the context of Islamic religious knowledge, religious practices, Quran recital, staying away from forbidden things and doing good deeds show significant association that truants have a lower median Islamic Religiosity Index (IRI) score. This result almost resembles a study conducted on teenagers between the ages of 11 to 18 in Pennsylvania, United States which showed the perception that religion is important in life and students' involvement in religious activities has associations with six high risk behaviours namely smoking, consuming alcohol, playing truant, indulging in sexual activity, drug abuse and depression [27].

There is a significant association between truancy and psycho-behaviour such as watching video or internet pornography, frequenting entertainment centre, smoking, motorcycle

racing and dating a special friend. The results corroborate with Garry in 1996 that truancy is a precursor to other delinquent or criminal activities. Miller & Plant in 1999 also show that students who lead a delinquent lifestyle, use drugs and smoke are predictors towards truancy. Mohammad et al in 2009 studied among early adulthood also show those who manifested delinquent/ high level of aggressive behavior were more than twice at risk than other children to develop drug use disorder.

Coping strategies used when encountering problems show that respondents who use problem solving methods once in a while are significantly more involved in truancy compared with respondents who always utilize this strategy. This is similar to a study carried out in FELDA settlements in Perak, Pahang and Johor using the Adolescent Coping Scale (ACS) which shows that high-risk teenagers have a lower mean score for problem solving methods compared with non-risk students [19].

Truancy cases should be dealt urgently as it has a major effect on the students, their families and the nation. Dropping out of school and getting involved in various delinquent activities are the after-effects of uncontrolled truancy. The problem will be aggravated unless all relevant authorities like school authorities and parents take immediate action. The Ministry of Education has also taken proactive measures by having a committee to combat truancy represented by various departments like the police force, health authorities, youth organizations, welfare department, local government and other relevant parties.

Our study has several limitations. The truancy definition differs from one study to another making it difficult to compare. We also did not classify truancy into pure truancy, school refusal or school phobia like many other studies before this. Our study population is only among Malay students so that generalisation is limited. Information bias might occur but we have taken precautions by giving training and proper instruction during the survey. Future research in this area should include all ethnic groups in Malaysia and use a standard definition similar

with other studies if possible. Combining qualitative aspect also might give more insight to the truant problem in the future.

Conclusion

This study concluded that truancy is one of the most frequent delinquent behaviour among secondary school students. Most of the psycho-behavioural factors identified needs to be addressed and intervened. Proper strategic plan and involvement of all parties concerned must be implemented to prevent further detrimental effects of truancy.

Acknowledgements

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ORIGINAL ARTICLE

SURVEY OF PSYCHIATRISTS ON FORENSIC PSYCHIATRIC ASSESSMENTS IN SINGAPORE

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Abstract

Introduction: **The quality of forensic psychiatry assessments in Singapore has come under recent criticism from the judiciary resulting in a loss of confidence in forensic psychiatric assessments. There is no local published standards or practice guidelines for forensic psychiatric assessments. We set out to survey local psychiatrists on various key aspects of local forensic psychiatric assessments.** *Methods:* **A survey was developed by two local senior psychiatrists with extensive experience in forensic psychiatry. It was sent out electronically to all Singapore registered psychiatrists.** *Results:* **The response rate was 33.6% (48 of 143 psychiatrists). Respondents agreed that risk assessment and management, capacity and competence assessments and critical appraisal of symptoms were specific forensic psychiatry skill sets. There was also a consensus that separation of treating versus assessment roles and an independent panel of psychiatrist would be useful. There was no clear consensus on which psychiatrists should perform forensic assessments or if language used and time taken for assessments were important. The estimated time for assessments ranged from 1.9 hour (SD 1.3) to 9.1 hours (SD 5.4) with time required for criminal > civil > capacity assessments. Private sector psychiatrists were more likely than public sector psychiatrists to feel that forensic psychiatric qualifications were not necessary to conduct forensic assessments.** *Conclusion:* **There is a consensus in the local psychiatric community on various key aspects of forensic psychiatric assessment. Stakeholders in forensic assessments should begin a dialogue on the way forward for forensic psychiatric assessments in Singapore.** *ASEAN Journal of Psychiatry, Vol. 13 (2): July – December 2012: 138-145.*

Keywords: Singapore, Forensic, Psychiatry, Survey

Introduction

Forensic psychiatry is a psychiatric sub-speciality that deals with the interface between psychiatry and the law. This broadly includes clinical work with patients having psychiatric conditions in correctional settings and forensic psychiatric assessments for the courts or lawyers. Forensic psychiatric assessment in Singapore has come under attack in recent years from the judiciary[1-3] for a lack of objectivity and thoroughness. In particular there were suggestions that public sector psychiatrists were more impartial compared to private sector psychiatrists[2], and that the first language of the interviewee and duration of assessment were factors affecting the adequacy of the forensic psychiatric assessment[3]. Such criticisms of the

practice of forensic psychiatry is an increasingly common situation internationally[4] and what is happening in Singapore is a reflection of a larger worldwide trend[5-9].

While there are internationally published practice guidelines for certain forensic psychiatry assessments[10, 11], they clearly state that they do "not present all acceptable current ways of performing forensic evaluations" and following such guidelines "does not lead to a guaranteed outcome". Singapore does not yet have local forensic psychiatry practice guidelines or standard of practice[2]. In the absence of local forensic psychiatry practice guidelines or standards, the Chapter of Psychiatrists under the Academy of Medicine set out to survey Singapore psychiatrists on their views of topical aspects of forensic psychiatry to determine local views on forensic psychiatry.

Methods

Two senior psychiatrists with extensive forensic psychiatry experience developed a two-page survey on forensic psychiatry that assessed the demographics and practice type of respondents and covered selected topics in forensic psychiatry. These topics include the skill sets in forensic psychiatry assessments, who should be performing forensic psychiatry assessments, time taken for various forensic psychiatry assessments and how forensic psychiatry assessments (e.g. language used) should be performed. Open-ended responses were allowed for each section.

An electronic version of the survey was sent out to all Singapore Medical Council registered psychiatrists from Dec 2010 - Mar 2011. Multiple copies of the survey were sent out to increase response rates. Comparisons between sub-groups of psychiatrists were done with c^2 tests.

Results

The response rate was 33.6% (48 of 143 psychiatrists). The average age of respondents was 47.8 years (SD 12.4) and 69% were male.

72.9% were in public practice and the average percentage of forensic work was 3.5% (SD 5.5).

There was a clear consensus on the specific skill sets for forensic psychiatry with the vast majority of respondents indicating that risk assessment and management, capacity and competence assessments and critical appraisal of symptoms were specific forensic psychiatry skill sets.

There was much less consensus on who should be doing forensic psychiatry work. While most respondents felt that all psychiatrists should do forensic psychiatry work, a significant minority of respondents felt that only psychiatrists with forensic qualifications or psychiatrists in forensic psychiatry units should do forensic psychiatric work.

There was a wide range in the estimated time required for various types of forensic psychiatric assessments, with durations in criminal (e.g. murder) > civil (e.g. damages for causing post-traumatic stress disorder) > capacity (e.g. wills) cases. The lowest estimated duration was 1.9 hours (SD 1.3) and highest 9.1 hours (SD 5.4).

A slight majority of psychiatrists felt that the duration taken to complete a forensic psychiatry assessment was an important indicator of adequacy of assessment and that it was essential for the assessment to be conducted in the language that the person being assessed was most comfortable with. Most psychiatrists agreed that the role of treating clinician and forensic assessor should be separate and that it would be useful to have an independent panel of psychiatrists to assess cases where conflicting diagnosis have been made.

The results were stratified according to the practice type (private versus public) and gender of the psychiatrists. It is noteworthy that there was only one statistically significant differences between private and public sector psychiatrist survey results. Private psychiatrists were more likely to feel that a psychiatrist did not need forensic qualifications to do forensic work ($c^2 = 3.98$, df=1, p=0.046). Interestingly female psychiatrists were more likely to be undecided if

the duration of assessments was an important factor for adequacy of the assessment (c^2 = 11.70, df=2, p=0.003). Please see Table 1 for detailed results.

Table 1. Results from survey of Singapore Psychiatrists on Forensic Psychiatry

Demographics	
Age	47.8 years (SD 12.4)
Male	69.0%
Public Practice	72.9%
Percentage of forensic psychiatry practice	3.5% (SD 5.5)
Whom should be doing forensic psychiatry assessments	
All psychiatrists	66.7%
Only psychiatrists with forensic qualifications	29.2%
Only psychiatrists in a forensic unit	20.8%
What are Forensic Psychiatry Skill Sets	
Risk Assessment and Management	83.3%
Capacity and Competence Assessments	83.3%
Critical Appraisal of Symptoms	79.2%
Estimated Duration of Forensic Psychiatry Assessments	
Capacity (lower estimate)	1.9 hours (SD 1.3)
Capacity (higher estimate)	4.7 hours (SD 2.6)
Civil cases (lower estimate)	3.1 hours (SD 1.9)
Civil cases (higher estimate)	7.2 hours (SD 3.9)
Criminal (lower estimate)	4.0 hours (SD 2.0)
Criminal (higher estimate)	9.1 hours (SD 5.4)
Do you think the duration taken to complete forensic psychiatric assessments is an important factor when considering the adequacy of the assessment?	
Yes	62.5%
No	20.8%
Maybe	16.7%
How important is it for the assessing psychiatrist to conduct the forensic psychiatric assessment in the first language of the person being assessed?	
Essential	58.3%
Good to have	39.6%
Not required	2.1%
Should the roles of treating clinician and forensic assessment be separate?	
Yes	77.1%
No	12.5%
Not sure	10.4%
Do you think it would be useful to have an independent panel of psychiatrists (public and private) to assess cases where conflicting diagnosis have been made?	
Yes	79.2%
No	10.4%
Not sure	10.4%

Discussion

The main findings from the survey were that there was no clear difference in the opinions of private versus public sector psychiatrists on major aspects of forensic psychiatry (forensic psychiatry skill sets, duration for forensic psychiatry assessments, how the assessments

should be done) and clear agreement on the separation of treating and assessment roles and the usefulness of an independent panel of psychiatrists in cases with conflicting diagnosis.

The judiciary has opined that spending more time, having more sources of information and the use of the first language of the individual being assessed are important considerations[3] for the adequacy of a forensic psychiatric assessment. These opinions have face validity and are consistent with generally agreed upon components of a good forensic psychiatric assessment[12]: Adherence to and documentation of ethical standards (e.g. clarification that the forensic psychiatric assessment was not a doctor-patient relationship), appropriate types and sources of data for a forensic psychiatric assessment, the selective use of standard psychological tests and forensic instruments, the collection and use of third party information and an explanation of the clinical facts and reasoning behind the psychiatrists' opinion.

However in our survey there was no clear consensus among psychiatrists in this survey on the relationship between duration or the language used in the forensic psychiatric assessment and its adequacy. There was also no clear agreement on which psychiatrists should be performing such assessments. Despite judiciary's opinions on the matter, there is no evidence that any of their suggestions improve the quality of forensic psychiatric assessment. The main reason for this is that there is no 'gold standard' or 'truth' about a defendant's competence to stand trial or insanity[13, 14]. Unlike in other areas of medicine where there are objective markers (e.g. histology for diagnosing cancer and radiographs for diagnosing fractures), in forensic psychiatry what we have are individual opinions on the matter. Critics have opined that psychiatrists would either end up deceiving either the legal system or the person being evaluated and ultimately may have little truth to offer to the courts in an adversarial system[15]. This pessimism has been countered with the 'Standard Position'[16] which broadly consists of objective truth-telling (accurately reflecting the scientific data on the subject at hand and the consensus of the field) and respect

for persons (avoidance of deception, exploitation and needless invasion of personal privacy). Proponents of the Standard Position believe that psychiatrists can offer reliable and valid testimony to the courts. This can be done by resisting an advocacy role using structured approaches to assessment that highlight inconsistencies[17] and with continual medical training. Even for the relatively mundane issue of language used in assessments, current guidelines[11] emphasize that the requirement is to ensure that the person being evaluated understands the concepts and knowledge areas being assessed and not the language used. Akin to the legal practice of using court interpreters, there is no evidence that forensic psychiatric assessments performed in the language the assessee is most comfortable with improves the quality of the forensic assessment. On the contrary, in the absence of a 'gold standard' it is disingenuous to assume that any particular aspect of a forensic psychiatric assessment (e.g. language used, time spent etc) will make the assessment closer to a relative 'truth'.

While it is unclear that 'more is better' in forensic psychiatry, what is clear is that if psychiatry were to adopt the judiciary's recommendations to simply spend more time on assessments, obtain more sources of information and use more translators, the resources required for forensic psychiatric assessments would increase dramatically. The implications of such an increase could include increased time required to completing forensic psychiatric assessments, delays in court proceedings, increased perceived disparities between resource limited public sector assessments and resource elastic private assessments and loss of public confidence in both the psychiatric and legal systems. It may be premature to conclude that 'more is better' in forensic psychiatry.

At the heart of recent criticisms was the question: Why do psychiatrists appear to disagree so dramatically in court[1-3]? In part, the issue is that of biased reporting. While the newspapers give extensive coverage to disagreements between psychiatrists[18], the evidence was that the agreement between psychiatrists was good irrespective of which

adversarial side[19, 20] they were on for serious crime. However there was less agreement between psychiatrists for anxiety spectrum disorders (e.g. post-traumatic stress disorder) and in civil cases there was better agreement between psychiatrists on the same adversarial side[21] and if the plaintiff was involved in a fatal accident[22].

There will always be situations where medical experts disagree and in forensic psychiatry there are three broad explanations for that: The general limitations of psychiatry, the specific limitations of forensic psychiatry and bias. Psychiatric assessments rely mostly on the subjective reports from the patient and the ability to objectify the assessment is necessarily limited by this fact. Even while the diagnostic guidelines are being revised to include more objective neuroscience markers, there is a recognition that there is still not a single diagnostic test based on neuroscience that can be applied in clinical psychiatric practice[23]. That is not to say that there is poor reliability or validity in modern psychiatric classification systems. The field trials for both major modern psychiatric classifications systems (DSM and ICD) showed good reliability and validity[24, 25] in the context of an empathetic doctor-patient relationship with a common therapeutic goal. While there is good reliability and validity when the psychiatric classification systems are properly used in this context, there is still considerable inconsistency in longitudinal psychiatric assessments[26-29].

In contrast, the context of the forensic psychiatric assessment is that of a complex interplay of interests where the psychiatrist has a duty to the court rather than the person being assessed. In this setting an empathetic environment is necessarily limited by the ethical concern of not allowing the person being assessed to believe the relationship with the psychiatrist is a therapeutic one. Without this therapeutic relationship the reliability of information elicited in the forensic context is inferior[30]. Perhaps the best way of approaching this is for forensic psychiatry to stay squarely within the realm of psychiatry and to present descriptive information about the mental state of the person being assessed and not to stray into the 'ultimate issue' testimony[31]: that is the legal or moral questions of whether the person being assessed is criminally responsible or the 'but-for' proximate legal test that asks psychiatrists to speculate on hypothetical scenarios involving a hypothetical defendant. The goals of the legal system are disparate from the medical system. The former is concerned with culpability (in criminal cases) and liability / causation (in civil cases) while the latter is concerned with diagnosis and treatment. The standards of what is admissible in court[32] or requirements for legal proceedings[33] are necessarily different from a scientific medical article[34] and just as "judges and lawyers should not play at being doctors"[35], so should doctors not try to be judges.

With respects to bias of psychiatrists accounting for conflicting assessments, there is evidence that under certain circumstances (e.g. anxiety disorders[19, 20] and civil cases[21]) the agreement between psychiatrists on the same adversarial side is higher than that for psychiatrists on opposing sides. Similarly under certain circumstances (e.g. fatal accidents involving the plaintiff[22], child custody cases[36] or in hindsight[37]) the assessments may reflect a bias based on sympathy or scepticism. In our own survey, there was very little difference in the opinions of public versus private sector psychiatrists. The only difference in opinion in the survey between private and public sector psychiatrists was that the former did not agree as much with the statement that psychiatrists needed forensic qualifications to perform forensic psychiatric work. This probably reflects the demand for forensic psychiatric assessments in the private sector and the reluctance of public sector psychiatrists to engage in forensic psychiatric work because of heavy workloads and lack of training. Despite this reassuring evidence, the fact remains that bias will always be a concern and the best approach towards this, and the limitations of forensic psychiatry, is what the judiciary has been practicing for many years: Group Decisions.

In the absence of a "gold standard" for forensic psychiatric assessments, it is possible to have an accurate group consensus by having multiple

independent assessments[38], i.e. an independent peer review committee[31]. It is interesting to note that the Family Court has already implemented the concept of an independent panel of psychiatrists by the use of a court appointed psychiatrists for child custody cases since 2nd quarter 2008[39]. This programme deliberately moved away from the traditional adversarial system to reduce the contest between opposing parties. This may be a step in the right direction for disputed cases with conflicting forensic psychiatric assessments in the interests of the involved parties.

The survey is limited by the low response rate and relatively small absolute number of respondents. Thus some of the findings can only be viewed as preliminary. However despite this limitation there were robust signals for the type of specific skill sets for forensic psychiatry, the separation of treating and assessment roles and the usefulness of an independent panel in cases with conflicting psychiatric diagnosis.

Conclusion

In conclusion, our survey has shown that there is much consensus among psychiatrists in Singapore on the major aspects of forensic psychiatry assessment in Singapore and little evidence of bias based on the adversarial side of the psychiatrist. There is a strong consensus that the role of assessment and treatment should be separate and that an independent panel of peers would be useful to resolve differences in opinion. We recommend that the stakeholders of forensic psychiatric assessments in Singapore begin a dialogue on the way forward to improve forensic psychiatric assessments and its perception in Singapore to bolster public confidence in both psychiatry and the law.

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ORIGINAL ARTICLE

THE MALAY-TRANSLATED VERSION OF THE AGGRESSION QUESTIONNAIRE (AQ): THE VALIDITY AND THE IDENTIFICATION OF TYPES OF AGGRESSION AMONG FEMALE PRISONERS

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Abstract

Objectives: **The aim of this study is to validate the Malay version of the Aggression Questionnaire (AQ) for the purpose of the future study related to aggression. Furthermore, the study seeks to identify types of aggression hold by the female inmates.** *Methods:* **A cross-sectional study was designed involving 90 Malaysian female prisoners. The analyses include descriptive analysis, confirmatory factor analysis, and reliability testing. After one-week interval, a test-retest was conducted.** *Results:* **The preliminary analysis confirmed that factor analysis was appropriate for the Malay-translated version of the AQ. The four factors structure was assessed but the factor loadings are remarkable different from the original versions. The total Cronbach's alpha coefficients is very high (α= 0.91). The Pearson's correlation however is low (r = 0.48) but acceptable for the instrument. Reliability of the subscales and the factors were also found satisfactory. Consequently, anger and hostility were identified as the most common types of aggression among the participants, followed by verbal aggression. In contrast, physical aggression was the least scored type of aggression.** *Conclusion:* **The Malay-translated version of the AQ was found to be valid and reliable to be used in future studies.** *ASEAN Journal of Psychiatry, Vol. 13 (2): July – December 2012: 146-156.*

Keywords: Aggression, Psychometric, Validation, Reliability, Female Prisoners

Introduction

Aggression is often assessed in relation to behavioral and conduct problems in human [1, 2]. Significant relationship between aggression and antisocial behavior has been established [2], as well as to other mental health problems such as personality disorders and substance abuse [1, 3]. Findings from the previous studies marked, the need to assess aggression particularly among high-risk group such as offender and prisoners population. This is very crucial for proper intervention and rehabilitation such as anger management and violence therapy. With increase in the number offender and prison's population worldwide, the assessment of aggression become particularly important.

The Aggression Questionnaire (AQ) is one of the most widely used self-report screening instruments for aggressiveness. It was designed by Buss and Perry (1992) with the third grade reading level to enable used in both children and adults. This instrument is used to identify four types of aggressive behaviors. According to the original version, the AQ consists of four factors or subscales, namely physical

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aggression, verbal aggression, anger, and hostility. The original AQ contains 29 items using the 5-point Likert scale where the respondent rate themselves for each items according to the given scales (1 = extremely not like me, 2 = somewhat not like me, 3 = neither like nor unlike me, 4 = somewhat like me, 5 = extremely like me). Different number of items represents each subscale. Nine items indicate physical aggression, whereas five items indicate verbal aggression. Another seven items assess anger, and eight items represent hostility. The total internal reliability of the AQ is .89 with individual internal reliability for each subscale [4].

Several translations and validations studies were identified for the AQ. Other than original English, the AQ has been translated into Chinese [5], Japanese [6], Swedish [7], Spanish [8], Dutch [9], Greek [10], German [11], and Italian [12]. None of the studies had involved the Malaysian population and no published study on the Malay-translated version of the AQ was found during the course of the current study. In Malaysia, published psychometric instrument to measure aggressiveness has not been developed. On the other hand, the national language of the country is Malay, which is spoken by majority of the Malaysian. Thus, in order to assess aggression among the Malaysian, screening instrument that is originally in other language is needed and therefore, requires the translation and validation. In the current study, the AQ was selected to be translated and validated in Malay. The objectives of the current study are to validate the Malay-translated version of the AQ through confirmatory factor analysis and, to determine the reliability of the instrument through reliability testing.

Methods

Study design and participants

The current study adapted cross-sectional study design for data collection. The source population was prisons that have female prisoners in the Peninsular Malaysia. The sampling frame was two of the prisons. The sampling was done according to a convenient sampling method. The availability of the participants was considered for the convenient sampling. The participants are required to be able to communicate, read and write in Malay without any help.

Separate calculation was done to determine the sample size in factor analysis and reliability testing. Calculation of the sample size for factor analysis was performed in accordance to Gorsuch's (1983) suggestion where the total number of items in an instrument is multiplied by 5 to obtain the required sample size [13]. On the other hand, calculation of the sample size for reliability testing was executed using Cronbach's alpha formula. With inclusion of estimated 20 percent dropout, the higher of the two resulting calculations, 165, was selected as the final sample size. However, due to the limited number of participants available in the selected population, only 90 participants could be recruited from the prisons. The sample size for test-retest reliability testing was 40.

Translation process

During translation, first of all, the original English version of the AQ was translated into Malay by the authors. The translations were examined thoroughly several times for adequacy of wording and meaning. Back-translation was done then. A language expert translated the Malay-translated version back into English. The expert had no prior knowledge of the original version. Later, both English-translated version and the original English version were compared for any distinct differences. The Malay-translated version of the AQ then finalized after no grammatical or language errors were identified.

Data Collection

In advance of the current study, a pilot study involving 50 female prisoners was conducted. Thus, for the current study, the data collection took place at two different prisons situated in the Peninsular Malaysia. The selected participants were properly informed regarding the current study through a briefing that was held prior to

the data collection. The briefing communicated on the purpose of the current study and any relevant information. The participants were allowed to ask as many inquiries regarding the current study to clarify any doubts. They were ensured of their rights to retreat from the current study at any time during the data collection. After the participants agreed to involve in the current study, they were given a respondent information sheet and a consent form to be read and signed. The data collection then commenced. On average, the participants took seven minutes to complete their response. Completed instruments were returned to the researcher. After one week, the same Malay-translated version of the AQ was given to some of the participants for test-retest reliability testing, to test if they would provide the same response as in the first phase. In addition, a face validity procedure was conducted involving 15 participants. Face validity is based on the participants' level of comprehension after going through the instrument [14]. The participants were asked to go through the Malay-translated version of the AQ and confirmed if they understood the translated instrument and the meanings. The participants unanimously agreed that they fully understood the instrument. Generally, the data collection processes were successfully completed without any problems.

Statistical Analysis

The data was organized and analyzed using SPSS version 19.0. Descriptive statistics were computed to summarize the demographic information and the frequency of occurrence for each subscale. The frequencies of occurrence were calculated based on the mean score. Subsequently, confirmatory factor analysis was executed to assess the factor structure of the Malay-translated version of the AQ. Based on the previous studies [8] [10], the translated instrument was extracted using principal component analysis with direct oblimin rotation. To ensure the adequacy of the instrument to proceed with factor analysis [15], the preliminary analysis for factor analysis was assessed. The values of the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy,

individual Measure of Sampling Adequacy (MSA), and the Bartlett's test of sphericity were observed. The KMO value is required to be higher than the acceptable limit of 0.50 [16]. The individual MSA affects the value of the KMO and it is expected to exceed 0.50 [17]. Items with low individual MSA might be excluded from the analysis, depending on the KMO value. The Bartlett's test of sphericity, which was also included in the preliminary analysis, indicates the appropriateness of factor analysis for the translated instrument [17]. It is expected to be significant for the analysis to proceed.

As the preliminary analysis was completed, the analysis proceeded with the assessment of the factor structure. For the Malay-translated version of the AQ, four factors were fixed prior to the confirmatory factor analysis, as suggested by the original version and previous studies [4, 8, and 10]. The factors represent the subscale or content domain within the structure of the instrument. Each factor explains certain percent of variability for the instrument. Mostly, factor loading was assessed to determine the factor structure of the instrument. Items that are highly loaded into each factor were verified and then compared to previous studies. For reliability analysis, the internal consistency reliability of the translated version was calculated by the value of Chronbach's alpha coefficient (α). The internal consistency was measured for the total score as well as individual subscale and factor. Test-retest reliability was evaluated by Pearson's correlation coefficient R for the total score, individual subscale and individual factors.

Results

The age of the participants in the current study were in between 17 to 53 years old (Mean= 28.81 years, SD= 8.01 years). The summary of the participants' demographic information is shown in Table 1. As shown in the table, Malay (87.8%) made up most of the participants, with majority are married (52.2%). Most of the participants achieved secondary education as their highest education (80.0%) and had no stable job prior to incarceration (42.2%). As a

child, 80 percent of the participants had lived with their biological parents, with majority had four to five siblings (35.6%).

The mean scores for each subscale are as followed; physical aggression, M = 15; verbal aggression, M = 12; anger, M = 16; and hostility, M = 20. Anger and hostility were identified as the most common types of aggression among the participants. The results are tabulated in Table 2. Most of the participants scored more than the mean score for verbal aggression (51.1%), anger (52.2%), and hostility (52.2%) subscales. On contrary, only 38.9% of the participants scored more than the mean score for physical aggression.

Table 1. Summary of Participants' Demographic Information (N= 90)

Information	N	%
Ethnicity		
Malay	79	87.8
Chinese	6	6.7
Indian	5	5.6
Marital status		
Single	22	24.4
Married	47	52.2
Divorcee	16	17.8
Widow	5	5.6
Highest education level		
Never been to school	3	3.3
Primary	9	10.0
Secondary	72	80.0
Tertiary	6	6.7
Employment prior to incarceration		
Permanent job	34	37.8
Always switching jobs	39	42.2
Unemployed	18	20.0
As a child, lived with:		
Both parents	72	80.0
Either parent and a stepfather/stepmother	8	8.9
Grandparents	7	7.8
Relatives	2	2.2
Foster family	1	1.1
Number of siblings		
Single child	4	4.4
1 – 3	25	27.8
4 – 5	32	35.6
More than 7	29	32.2

Table 2. Frequency of Occurrence of Each Subscale Among the Participants (N=90)

Subscales	N	%
Physical aggression Scores: 9 – 14* $\geq 15^{+}$	55 35	61.1 38.9
Verbal aggression Scores: 5 – 11* $\geq 12^{+}$	44 46	48.9 51.1
Anger Scores: 7 – 15* $\geq 16^{+}$	43 47	47.8 52.2
Hostility Scores: 8 – 19* $\geq 20^{+}$	43 47	47.8 52.2

Notes. * Less than the mean score, $^{+}$ Equal or more than the mean score.

Factor analysis

The preliminary analysis for the Malay-translated version of the AQ was found satisfactory. The KMO Measure of Sampling Adequacy was equal to .75 with the individual MSA lies within 0.48 to 0.91. Only one item (item number 4) had the individual MSA less than 0.50. Considering the high value of KMO Measure of Sampling Adequacy, the analysis proceeded with all items. The Bartlett's test of sphericity of the translated version was found highly significant ($p < 0.001$), thus the analysis proceeded with the assessment of factor structure. Four factors that were extracted from the Malay-translated version of the AQ explained 51.74 percent of the variance. Factor 1 explained 30.14 percent of variance. Factor 2 explained 8.97 percent of variability in the translated version, whereas Factor 3 explained 6.64 percent. Lastly, Factor 4 explained 5.98 percent of variance. The factor loading however did not correspond to the original version. The factor loading is shown in Table 3. Based on the primary factor loading, nine items are highly loaded into Factor 1, 2 and 3 respectively, whereas only two items are highly loaded into

Factor 4. The original [4] and previous studies [8, 10] suggested four subscales, which are physical aggression, verbal aggression, anger, and hostility to represent each factor.

Apart from Factor 4, the other factors had no clear interpretation for labeling. As shown in Table 3, in Factor 1, five items (items number 8, 11, 16, 25, and 29) indicate physical aggression; three items (items number 3, 10 and 15) indicate hostility, and one item (item number 28) correspond to anger. In Factor 2, five items (items number 7, 17, 20, 24, and 26) indicate hostility; three items (items number 1, 12 and 19) correspond to anger, and one item (item number 21) to verbal aggression. Lastly, in Factor 3, four items (items number 2, 5, 13, and 22) indicative of physical aggression; three items (items number 9, 18 and 23) correspond to anger, and two items (items number 6 and 27) are verbal aggression. Based on the majority of similar items that highly loaded into each factor, Factor 1 represents both physical aggression and hostility, Factor 2 mostly represents hostility and anger, Factor 3 mostly represents physical aggression, and both items in Factor 4 represents verbal aggression.

Table 3. Factor Loadings for the Malay-Translated Version of the AQ

Items No	Factor loadings			
	Factor 1	Factor 2	Factor 3	Factor 4
1	0.403	0.412		
2			0.762	
3	0.540			0.534
4				0.746
5		0.346	0.397	
6			0.522	
7		0.629		0.445
8	0.481		0.377	
9		0.319	0.572	
10	0.596			
11	0.648			
12		0.561	0.311	
13			0.751	
14			0.445	0.700
15	0.472			
16	0.809			
17		0.334	0.395	
18		0.376		
19		0.697		
20		0.798		
21		0.569		
22			0.877	
23	0.302		0.365	
24		0.742		
25	0.362		0.318	
26		0.392		
27	0.328		0.357	
28	0.501	0.307		0.319
29	0.725			

High correlations between subscales, as well as between factors were demonstrated by Pearson's correlation coefficients. The results are shown in Table 4. All subscales were found highly correlated with one another (*p* < 0.001). The strongest correlation were demonstrated between anger and hostility (r = 0.69), followed by physical aggression and anger (r =.64), and between physical aggression and verbal aggression (r = 0.63). Some of these result replicated the original and previous studies [4] [8] [9]. Between factors, strongest correlation was demonstrated between Factor 1 and Factor 3 (r = 0.69, *p* < 0.001). Other factors were also correlated with one another except for Factor 2 and Factor 4. The significant correlation between subscales and factors explained the factor loadings in the current study.

Table 4. Pearson's Coefficient (R) Between Subscales and Factors

Scale	Verbal aggression	Anger	Hostility
Physical aggression	.63*	.64*	.49*
Verbal aggression	-	.51*	.54*
Anger	-	-	.69*
Factor	Factor 2	Factor 3	Factor 4
Factor 1	.49*	.69*	.24**
Factor 2	-	.51*	.14
Factor 3	-	-	.28**

* $p < .001$, ** $p < .01$

Reliability testing

In total, the Chronbach's alpha of the Malay-translated version of the AQ is very high (α = 0.91). The results of the Chronbach's alpha and test-retest reliability are tabulated in Table 5. As shown in the table, the individual subscale produced considerable high internal consistency, except for verbal aggression. Based on the factors revealed in factor analysis, the individual factor also had high internal consistency, except for Factor 4.

The test-retest reliability however is poor for the translated instrument. As shown in Table 5, the Pearson's correlations for all subscales are less than 0.5. In contrast, based on the individual factor, the correlations are above 0.50 except for Factor 1. The total score also had low Pearson's correlation.

Table 5. Chronbach's Alpha and Pearson's Coefficient (R) of Individual Subscales, Factors, and Total Score for the Malay-Translated Version of the AQ

Subscales / factors	Chronbach's alpha (α)	Pearson's correlation (R)
Based on subscales:		
Physical aggression	0.82	0.46*
Verbal aggression	0.64	0.30
Anger	0.79	0.42*
Hostility	0.71	0.42*
Based on factors:		
Factor 1	0.83	0.26
Factor 2	0.80	0.50*
Factor 3	0.86	0.61*
Factor 4	0.64	0.57*
Total score	0.91	0.48*

* $p < 0.001$

Discussion

The factor loadings in the current study did not correspond to the original version. The original AQ provides four subscales with certain number of items. In contrast, the current factor loadings revealed different number of items in each factor and had no clear interpretation. The number of items for each factor was decided based on the items that highly loaded into the factor. As example, items number 4 and 14 were highly loaded into Factor 4 compared to the other factors, thus both items were assigned to Factor 4. Apart from Factor 4, the remaining three

factors had similar number of items assigned to each, which are nine respectively. These factor loadings are different from the original AQ where no subscale had the same number of items.

No single label could be assigned to each factor, except for Factor 4 (verbal aggression). Most of the items in the other factors are mixed together, thus it is difficult to assign a single label to the factors. These findings replicated the previous studies [11, 12] where different items were mixed in a single factor. Detailed examination of the items in each factor revealed that items that indicative of physical aggression are mostly found in Factor 1 and Factor 3. On the other hand, items that correspond to hostility are mostly loaded into Factor 1 and Factor 2. Lastly, items that indicate anger are mostly found in Factor 2 and Factor 3. These results suggested inter correlation between the items of different subscales.

Buss and Perry (1992) previously has suggested the associations between subscales in the AQ. Based on the component correlation matrix in the analysis result, each factor is highly correlated with one another, which means that there is some interrelation among the constructs being measured and thus the factors are theoretically dependent on one another [4,17]. The high correlation between subscales as well as factors showed that there is association between subscales and factors. This explained the items that were loaded highly into different factors than the original subscales. The strong correlation between anger and hostility may explain the foundation of Factor 2. Correlation between physical aggression and anger also may explain the foundation of Factor 3. Between factors, strong correlation between Factor 1 and Factor 3 may indicate physical aggression subscale. The items that mostly loaded into both factors may explain this result. Correlation between other factors may also be explained by the factor loadings. No correlation was established between Factor 2 and Factor 4; indicate no association between the factors.

Some previous studies had shown significant interrelation between items [12], where some items were found highly loaded into different primary loadings from the original [11,12], as demonstrated in the current study. Inter-correlations between subscales were also found significant in some previous study [9].

The original English version of the AQ had high internal consistency (α = 0.89), demonstrated the high reliability of the instrument. Reliability refers to the consistency of an instrument to measure a construct when given to the same person at a separate time or given to a different person in a similar condition [17]. The Chronbach's alpha is suggested to be between 0.70 and 0.80 for a reliable instrument [17], but it depends heavily on the number of items [18] and the variety of the constructs being measured, such as in psychological construct [19]. The current study found the internal consistency for the total score of the Malay-translated version of the AQ is very high (α = 0.91). The Chronbach's alpha for the subscales and the factors are also high (α = 0.64 to 0.86). Only one subscale (verbal aggression) and one factor (Factor 4) showed Chronbach's alpha lower than 0.70 (α = 0.64). As mentioned earlier, Factor 4 represents verbal aggression. These findings show that verbal aggression tends to have low internal consistency, as demonstrated in previous studies [8, 9,11].

The test-retest reliability of the AQ Malay-translated version in total is moderate, as measured by Pearson's correlation. The subscales also produced moderate Pearson's coefficient. The factors on the other hand, had higher test-retest reliability, except for Factor 1, which is low. As the test-retest reliability assess the consistency of measures between two scores when an instrument was given to the same person twice [10], the correlation showed shows Malay-translated version of the AQ had moderate consistency for repeated measure. This result contradicts the original version where the test-retest is highly stable over time [5]. The test-retest however depends on several factors including the test-retest time interval [20], and the memory effect [21]. Furthermore, this result

may have been influenced by the nature of the items in the AQ [20]. Aggressive behavior is generally unstable, such as impulsively hitting someone or constantly having arguments with others. These unstable behaviors could have had a tendency in lowering the test-retest reliability [22]. The cultural factors especially affect the instability of aggressive behavior, particularly among female in Malaysia.

Several translated and validated versions of the AQ were identified during the course of the current study. The AQ has been translated into Chinese among student and community adults [5]. Confirmatory factor analysis was conducted using different statistical software than the current study. The internal consistency for the Chinese version was established for each subscale, which ranges between 0.56 and 0.74 [5]. In Japanese-translated version, exploratory factor analysis was performed and four factors structure was revealed. The Chronbach's alpha for each subscale was found between 0.75 and 0.77 [6]. The AQ has also been translated into Dutch among a group of adolescent male offender aged from 12 to 18. All subscales were found significant intercorrelated with the total Chronbach's alpha equal to .86. The Chronbach's alpha for the subscales are between .51 and .75, with the lowest is verbal aggression [9]. In Greek, the AQ was validated among the general population and both exploratory and confirmatory factor analysis were conducted to examine the factor structure [10]. Four factors structure was revealed which explained 43.7 % of variance. The Chronbach's alpha was established in between 0.5 and 0.84, with the total value are between 0.85 and 0.88 [10].

In German-translated version, the confirmatory factor analysis also revealed four factors that explained 44.5 percent variability [11]. The internal consistency for the total score is 0.85, with individual Chronbach's alpha for each subscale range between 0.62 and 0.82. Again, verbal aggression had the lowest Chronbach's alpha value (α= 0.62). Test-retest was conducted within nine months interval. High test-retest reliability was produced for the total score (r =

0.73) and individual subscales (r =. 066 to r = 0.74). Overlap of items in a single factor was mentioned in this study [11]. In Italian version, the exploratory factor analysis extracted only three factors from the translated version of the AQ [12]. Further confirmatory factor analysis revealed four factors structure that explained 44.59 percent of variance. In the study, significant interrelations between subscales were established with verbal aggression and anger was found mixed in two factors. The Chronbach's alpha ranged from .44 to .78, with the lowest being verbal aggression and anger [12].

Lastly, the AQ was also been translated into Spanish [8]. The factor analysis revealed four factors, which explained 42.1 percent of variance. Significant correlations were established between physical and verbal aggression, and between anger and all subscales. The current study replicated some of the finding in the validation of the Spanish-translated version AQ. The internal consistency for each subscale is between 0.57 (verbal aggression) and 0.77 (anger), with the total score is 0.82. Test-retest was done after five weeks interval. The test-retest reliability for the study, which was measured by Pearson's correlation, was found high. The total score had Pearson's correlation of 0.81. For the subscale, the lowest Pearson's correlation was hostility (r = 0.57) and the highest was anger (r = 0.88) [8].

Among the four types of aggression being measured by the AQ, most female prisoners in the current study exhibited higher tendency to engage in verbal aggression, become angry, or being hostile towards others. Compared to the three types of aggression, female prisoners are less likely to become physically aggressive. These findings showed that female inmates in Malaysian prison are more likely to exhibit their aggressive nature indirectly. They are unlikely to directly become aggressive by engaging in physical action, such as involve in fighting, breaking things, or threatening others, as being suggested by the questions in the AQ. Instead, they are more likely to feel angry and being

hostile, such as easily to gets angry, felt suspicious towards some people, and easily frustrated over things. As a result, they might engage in verbal aggressive acts, such as often getting into an argument and hardly agrees with others.

The study population in the current validation work is the limitation of the study, where only female prisoners were involved. Certain factors such as the nature of the prison's population and types of crime convicted by the prisoners needed to be considered.

It is possible that the prisoner had higher aggressive behavior compared to the free-living people and thus it might affect the validation and reliability testing. Thus, the current Malay-translated version of the AQ is more valid and reliable for female prison population rather than Malaysian population in general. Based on this limitation, local psychometric instrument to measure aggression could be designed in the future with reference to the finding of the current study.

In conclusion, the factor analysis and reliability testing yielded satisfactory results for the Malay-translated version of the AQ. Differences between the Malay version of the AQ and the original version, as well as to previous studies can be well explained. So far, the Malay-translated version of the AQ is valid and reliable as a screening instrument for identifying aggression among the Malaysian, especially female prisoners. Different sample's population is favorable in further study to validate the Malay-translated version of the AQ.

Acknowledgement

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ORIGINAL ARTICLE

A PRELIMINARY STUDY ON THE SPECIFICITY AND SENSITIVITY VALUES AND INTER-RATER RELIABILITY OF MINI INTERNATIONAL NEUROPSYCHIATRIC INTERVIEW (MINI) IN MALAYSIA

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Abstract

Objective*: The MINI International Neuropsychiatric Interview (MINI) is a short, structured diagnostic interview compatible with the Diagnostic and Statistical Manual of Mental Disorders-IV (DSM-IV). It was designed for clinical practice, research in psychiatric, primary care settings and epidemiological surveys. This preliminary study aims to evaluate the reliability and validity of the Malaysian Version of MINI for Major Depressive Disorder and Generalized Anxiety Disorder symptoms criteria only. *Methods*: Six hours of MINI training was given as part of a National Health Morbidity Survey training program for layman interviewers ($n=229$) and three videos were prepared by an expert psychiatrist for inter-rater reliability purposes. Meanwhile, for validity purposes, the MINI was administered to patients with Major Depressive Disorder ($n=30$), Generalized Anxiety Disorder ($n=20$) and to a normal population ($n=60$), to conform against the Diagnostic and Statistical Manual of Mental Disorder (DSM-IV) that was administered by psychiatrists. *Results*: Overall the inter-rater reliability was satisfactory (0.67 to 0.85) and the concordance between the MINI's and expert diagnoses was good, with kappa values of greater than 0.88. *Conclusions*: The Malay version of the MINI is adjusted to the clinical setting and for the assessment of positive cases in a community setting. Modifications were highlighted to correct any identified problems and to improve the reliability of the MINI for future research and clinical use. *ASEAN Journal of Psychiatry, Vol. 13 (2) July – December 2012: 157-164.

Keywords: MINI, Major Depressive Disorder, Generalized Anxiety Disorder, Inter-Rate Reliability, Validity

Introduction

In conducting an epidemiological survey, there is a need for a reliable and valid instrument. An inappropriate assessment may lead to failure to detect and to diagnose a disorder, and consequently block the referral for appropriate intervention [1]. This would be harmful to individuals who suffer from mental disorders as appropriate intervention could be offered and it could affect the quality of life of a person and also prove to be a burden to the social and economic growth of a country [2].

In that regard, the World Health Organization (WHO), using a MINI International Neuropsychiatric Interview (MINI) as a psychiatric interview tool to perform a multicentre study in 14 countries, was able to report that on the average 24% of the people who attended primary care presented at least one current mental disorder, while another 9% presented clinically significant subsyndromal conditions [3]. The MINI was developed by French and North American researchers, and presented a good validity in a multicentre study (performed in Europe) that compared the diagnoses by general practitioners obtained using the MINI with the diagnoses obtained by psychiatrists using non-structured interviews [4].

The MINI is short, simple, clear and easy to administer, being shorter than the typical research interview but more comprehensive than the screening test [4]. It is also highly sensitive (i.e. a high proportion of patients with disorders can be detected by the instrument). It is specific (i.e. it has the ability to screen out patients without disorders). The MINI is compatible with international diagnostic criteria, including the International Classification of Disease (ICD-10) as well as the Diagnostic and Statistical Manual of Mental Disorders (DSM). It is useful in clinical psychiatry as well as in research settings [4].

Historically, for epidemiological surveys in the United States of America (USA), the Diagnostic Interview Schedule (which later generated the DSM-III), a modified version of the Composite International Diagnostic Interview (CIDI), and the Structured Clinical Interview for DSM-III-R Diagnosis (SCID) were used as a structured research diagnostic interview that could generate reliable psychiatric diagnoses in general population samples [5]. Meanwhile, in Asian countries, the MINI has been validated in several countries [6, 7, 8] but General Health Questionnaire (GHQ) was used in Thailand [6] and Singapore [7] as a screening tool for psychiatric morbidity. However, their studies used two-phases of screening by having gold standard measures to confirm the diagnoses and to report their epidemiological data.

In the case of Malaysia, the first National Health and Morbidity Survey (NHMS) was conducted in 1986 by the Institute for Public Health (IPH), which is currently one of the research organizations under the umbrella of the National Institute of Health (NIH). From the first NHMS, the survey was conducted 10 yearly; i.e. the second and third NHMS 1996 and 2006, respectively. The GHQ-28 was used as a screening tool for psychiatric morbidity in the country with no second-stage of assessment to confirm the diagnoses [9]. To date, the majority of researches on the prevalence of depression and anxiety have been undertaken with screening tools instead of diagnostic interviews [1]. For this reason, and in order to be consistent with other countries, the MINI needs to be validated before it can be used with confidence to conduct such surveys for an epidemiological research or clinical study in Malaysia. Until today, even though the MINI has been used a lot in a clinical setting, no studies have yet validated the Malay version of the MINI.

Hence, the purpose of the present study is to evaluate the Malay version of the MINI in term of its reliability and validity. As this is a

preliminary study, only two diagnoses (i.e. Major Depressive Disorder and Generalized Anxiety Disorder) are conducted. It is hypothesised that the MINI for MDD and GAD would be acceptable and reliable to be used as a diagnostic tool in a research and clinical setting in Malaysia.

Methods

Participants

(a) Interviewer' versus psychiatrist's video rating
The inter-rater reliability was assessed in a group of 229 interviewers. All the interviewers had a minimum passing grade of secondary school level of education. An expert psychiatrist [last author] prepared the videos consisting of a session with patients using the MINI questionnaire. The interviewers then rated the answers after watching the video. The patients who were selected in the video were from among those suffering from Major Depressive Disorder and Generalized Anxiety Disorder, and persons with no psychiatric diagnosis. The interviewers were given a half-day's (6 hours) training on the disorders and also on interview skills prior to the video session.

(b) Patients and normal population
Thirty patients with Major Depressive Disorder, 20 patients with Generalized Anxiety Disorder, and 60 healthy, non-psychiatric volunteers were recruited from psychiatric clinics, and primary healthcare centre.

Materials

The main instrument for this study was the MINI International Neuropsychiatric Interview (MINI). The MINI, devised by Sheehan and Lecrubier [4], is an internationally used diagnostic interview that generates psychiatric diagnoses for the Diagnostic and Statistical Manual for Mental Disorders-IV as well as the International Classification of Disorders-10. It is a short, structured interview that has been developed and is being widely used in epidemiological studies. It has been validated

against the SCID-P (Structured Clinical Interview for DSM-IV – Patient Version) and the CIDI (Composite International Diagnostic Interview), as well as against expert opinion. It has been shown to have a high clinical utility and patient acceptance [10]. A multicentre study that compared the diagnoses by general practitioners obtained using the MINI with the diagnoses obtained by psychiatrists using non-structured interviews obtained a kappa coefficient between 0.41 and 0.68, a sensitivity between 0.41 and 0.86, and a specificity between 0.84 and 0.97 [11]. The "gold standard" diagnosis was established using the Structured Clinical Interview for DSM-IV. In this study questions pertaining to Generalized Anxiety Disorder was referred to the MINI version 6.0 while the format of the questions for Major Depressive Disorder was taken from the MINI version 5.0.

Procedure

Translation and back-translation procedures - The group in charge of the translation from English to the Malay language was composed of psychiatrists, clinical psychologists and public health officers.

The translation procedure was divided into four distinct steps. First, the group had an agreement meeting to work out and discuss the comprehensibility, acceptability and cultural applicability, as well as the appropriateness of the format, wording and phrasing of the questions. Second, each member of the group was in charge of a number of modules. Third, for face validity, the modules were tested out on a group of people from various levels of education in order to see the whether the questions made sense to them. Finally, a concordance meeting with the whole team was held after the completion of each module with the aim of reading the Malay version to compare it to the original English version, and to work on the cultural and social weight of the words and sentences. For the back-translation procedure, an independent group proceeded to do the back-translation of the fully revised translated version into English. Then, a comparison of the back-

translation with the original version was conducted for semantic and conceptual equivalence.

For the video rating during the MINI training workshop - The expert was a professor of psychiatry (MT) and he used the MINI to interview patients. The interviewers then rated the MINI questionnaires based on the answers given by the patients in the video. Three videos were shown to differentiate between Major Depressive Disorder, Generalized Anxiety Disorder and no diagnosis. The interviewers were given a half-day's training that included a lecture and role-playing in order for them to be able to comprehend and experience how to conduct the MINI interview prior to the video rating.

For validity purposes, both the "MINI interviewers" and the expert were blind towards each other's diagnosis. Firstly, the MINI interviewers (clinical psychologists) conducted the interviews with the patients and the normal population and then referred the participants to the experienced psychiatrist to confirm their diagnoses based on the DSM-IV criteria. The DSM-IV diagnosis is a semi-structured interview that should only be used by experienced professionals specializing in clinical psychiatry because it requires extensive knowledge in this area. All the participants were asked to sign a consent form prior to participating in the study. The research project was approved by the Research Ethics Committee of the Ministry of Health, Malaysia.

Statistical Analyses

The specificity, sensitivity, positive and negative predictive values were computed using the XLSTAT. The inter-rater reliability was computed using the equation for the generalized kappa as proposed by Fleiss [12]. The concordance between the diagnoses obtained

with the MINI and those obtained with the SCID was evaluated through the kappa coefficient. To perform a qualitative analysis of the kappa coefficient values — which measure the proportion of diagnostic concordance observed between raters, correcting the casual concordance proportion that would usually be expected — it was considered that values above 0.75 indicated excellent concordance; values between 0.40 and 0.75, satisfactory concordance; and below 0.40, unsatisfactory concordance. To evaluate the predictive validity of the MINI diagnoses in relation to the SCID, calculations were made regarding the sensitivity, specificity, as well as positive and negative predictive values and total accuracy, considering the presence or absence of psychiatric disorders measured by the DSM-IV as the gold standard.

Results

Inter-rater reliability

An inter-rater reliability analysis using the Fleiss' kappa statistics was performed to determine the consistency among the raters. For session 1, the Fleiss' kappa was 0.67 (SE = 0.001; CI = 0.67-0.68) indicating a substantial agreement between the raters. The results for session 2 revealed a strong agreement between the raters with a Fleiss' kappa of 0.85 (SE = 0.0008; CI = 0.850 – 0.853).

Validity

The results for the kappa subscales of specificity, sensitivity, positive predictive values, and negative predictive values are presented in Table 1. There are four categories presented in the table: no diagnosis, Generalized Anxiety Disorder (GAD), Major Depressive Disorder-Lifetime (MDD-LT), and Major Depressive Disorder-Current (MDD-C). In general, these obtained values were all very good indicating the adequate validity of the Malaysian version of the MINI.

Table 1. Sensitivity and specificity of the Malaysian version of the MINI per diagnostic class using the DSM-IV as the gold standard (n = 110)

	True Positive	True Negative	False Positive	False Negative	Kappa (95% CI)	Sensitivity	Specificity	Positive Predictive Value	Negative Predictive Value
No Disorders	55	50	4	1	0.91 (0.83-0.98)	0.98 (0.89-0.99)	0.93 (0.81-0.98)	0.93 (0.83-0.98)	0.98 (0.88-0.99)
GAD	18	88	4	0	0.88 (0.76-0.99)	1 (0.78-1.00)	0.96 (0.87-0.99)	0.82 (0.59-0.94)	1 (0.95-1.00)
MDD-LT	16	92	0	2	0.93 (0.84-1.03)	0.89 (0.64-0.98)	1 (0.95-1.00)	1 (0.76-1.00)	0.98 (0.92-0.99)
MDD-C	25	84	1	0	0.97 (0.93-1.02)	1 (0.83-1.00)	0.99 (0.93-0.99)	0.96 (0.78-0.99)	1 (0.95-1.00)

Note: Generalized Anxiety Disorder (GAD); Major Depressive Disorder-Lifetime (MDD-LT); Major Depressive Disorder-Current MDD-C)

Discussion

This study proved that the Malaysian version of the MINI is reliable and valid in eliciting symptoms criteria used in making DSM-IV diagnoses for Major Depressive Disorder and Generalized Anxiety Disorder in less than five minutes.

The main finding of this study is the good psychometric characteristics of the MINI applied by the interviewers after a MINI training workshop. The kappa coefficients between the raters showed values ranging from satisfactory to excellent (0.67 to 0.85). Similarly, this study reported almost similar results to Moroccan (0.79 to 0.95) [13] and Brazilian studies (0.65 to 0.85) [14].When comparing these results with those obtained by the original MINI development group in a European multicentre study (kappa between 0.41 and 0.68) [5] and a Japanese study [8], the present study revealed higher concordance levels.

One of the reasons could be that a MINI training was offered to the interviewers before they did the video rating. In this regard, the present results cannot be generalized for training models that are less intensive and which use less diverse educational activities or experienced trainers, as in this study all the trainers for the MINI training possessed at least a minimum of 5 years working experience as psychiatrists or clinical psychologists. Regarding the impressive validity results (kappa values of 0.88 to 0.97), the MINI interview was conducted by clinical psychologists and then referred to psychiatrists to confirm the diagnoses. Most of the clinical psychologists and psychiatrists considered the Malay version of the MINI as acceptable and comprehensible for layman interviewers and their patients, and clinically relevant to elicit symptoms criteria in making DSM-IV diagnoses of Major Depressive Disorder and Generalized Anxiety Disorder.

This paper is the first report on the validation of the MINI against the DSM-IV by psychiatrists. In that regards, two important points need to be highlighted for future research is to increase the sample size and to further evaluate other specification for psychometric properties other than what has been reported. On the other note, based on the results of this study, for clinician or researchers who intended to use MINI, there are several questions in the MINI need to be used in careful way of questioning and intonation in order to gain understanding from respondent. For instance, there are few colloquial issues such as "*tak keruan,*" "*perkara rutin,*" "*tekanan yang berlebihan,*" "*perkara yang dinikmati,*" and the word "*gejala,*" which should be taken into consideration when conducting interviews with people from different levels of education and for whom Malay is not their main spoken language at home.

In conclusion, the present study showed that the MINI is a useful instrument with good psychometric qualities in a real world setting when used by layman interviewers to conduct a large scale epidemiological survey. Therefore, proper training is important in order to ensure that the interviewers will be able to conduct the interview in a similar way as the mental health professional's interview. On the same note, consultation and interviewing skills also need to be emphasised besides being able to conduct the MINI interview in order to get a good response from the targeted population. It is highly recommended that validation studies be conducted for the other disorders listed in the original MINI diagnostic interview in future to cater more to psychiatric morbidity in epidemiological surveys or clinical studies.

The Malaysian Version of MINI, especially for Major Depressive Disorder and Generalized Anxiety Disorder, can be used by academic researchers and layman interviewers (with adequate training) for rapid screening of homogenous samples for clinical trials and epidemiology studies. It has potential applications as a diagnostic screening tool for community surveys, psychiatric hospital admissions and outpatient clinic evaluations as a first step in outcome tracking and continuous quality improvement programs. For research matters, this instrument will be used soon in Malaysian national epidemiological surveys,

which will provide more accurate prevalence rates of mental disorders in a representative sample of the general population of Malaysia.

Acknowledgement

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ORIGINAL ARTICLE

BRAIN FAG SYNDROME (BFS), SLEEP, AND BELIEFS ABOUT SLEEP AMONG SECONDARY SCHOOL STUDENTS IN NIGERIA

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Abstract

Objective: **Brain Fag, a culture bound syndrome which manifests especially among students in Africa was investigated in relation to sleep and beliefs about sleep in a sample of Nigerian secondary school students.** *Methods:* **A sample of 500 secondary school students were drawn from six secondary schools in Ile-Ife, Osun State, Nigeria. The Brain Fag Syndrome Scale, Beliefs and Attitude about sleep Questionnaire, and selected items of Pittsburgh Sleep Index were administered on the participants.** *Results:* **Students with Brain Fag Syndrome (BFS) slept an average of 5.8 hrs (S.D = 1.1) while those without BFS slept an average of 5.9 hrs (S.D = 1.1). One hundred and eighty two (37.3%) BFS students slept above 6 hrs a day compared with 32 (62.7%) of non BFS students (t = -2.667; df = 49; p = 0.657). Students with BFS (44.3%) slept early while 33.8% of students without BFS slept early (X^2 = 7.324, df = 3, p = 0.007). Early insomnia was experienced by 57% of BFS cases while 55% of non BFS cases experienced early insomnia (X^2 = 2.019; df = 1; p = 0.155).** *Conclusion:* **BFS students in Nigeria to adjust their sleep patterns and habits in order to forestall clinically significant psychological breakdown and impairment in cognitive functioning.** *ASEAN Journal of Psychiatry, Vol.13 (2): July – December 2012: 165-175.*

Keywords: Brain Fag, Sleep, Beliefs, Secondary School, Nigeria

Introduction

The amount of sleep and the time of sleep do play a part in how prepared a student is to learn [1]. Western studies have documented that students get an average 5 to 6 hours of sleep at night as opposed to the widely accepted healthy range of 8 to 9.5 hours [2,3]. These authors reported similar finding in China where 70% of their high school students slept less than 7 hours at night. According to these authors, about 2 to 5 out of every ten high school students reported

significant daytime sleepiness because of unsatisfactory night time sleep.

Sleep deprived students are prevented from absorbing most information in their classes [1]. Moreover, fatigue from lack of sleep prevents students from peak academic performance by hindering memorisation, concentration, reaction time, and coordination. Students receiving poor grades in school were getting less sleep than students receiving good grades [1,3].

Students' mental health and sleep have been found to be significantly associated [4]. These authors reported that sleep problems play a role in behavioural problems. For example, adolescent sleep difficulties are often connected with attention deficit hyperactivity disorder and depression [5]. Irritability, anxiety [5], and decrease in creativity and ability to handle difficult tasks are more behavioural effects of lack of sleep [6]. Furthermore, inadequate emotional information processing [7], increased level of suicidal tendencies [8], poor academic performance [9], daytime leg pain [10], increased body mass index [11], specific phobia, mood disorder, major depressive disorder, obsessive compulsive disorder [12] are common in persons who suffer from sleep deprivation. Moreover, sleep sufferers share many misconceptions about insomnia and sleep and this could result in a vicious cycle of health problems [13].

Brain fag syndrome (BFS) is a mental health problem found among students. BFS has emerged as one of the recurring culture bound syndromes or indigenous psychopathologies in literatures of student's psychopathological response to reading in Africa [14 – 18]. The syndrome was first described half a century ago by Prince as a psychiatric illness associated with study among African students [9]. BFS is a tetrad of somatic complaints; cognitive impairments; sleep related complaints; and other somatic impairments. The somatic complaints consist of pains and burning sensations around the head and neck; the cognitive impairments consist of inability to grasp the meaning of written and sometimes spoken words as well as inability to concentrate and poor retention; sleep related complaints consisting of fatigue and sleepiness in spite of adequate rest; and other somatic impairments such as blurring, eye pain and excessive tearing. BFS affects 6 to 54 students out of 100 [18]. BFS has been found among black South African undergraduate students [20] where 17.7% of the undergraduates had BFS symptoms.

As far back as three decades ago, an association was observed between sleep and BFS [16]. BFS sufferers slept less than controls especially when examination approached adding significantly an average of 2.9 hrs per day to the period they stayed awake than the 1.4 hrs per day of controls. Morakinyo [16] hypothesized that BFS ''is a stress reaction in people with a nervous predisposition induced principally by such factors as sleep deprivation and drug abuse, which are self-imposed in order to ensure successful outcome of an enterprise.''

There is sparseness of studies addressing sleep and sleep patterns in Nigeria. Among the few existing recent studies, focus has been on children and junior secondary school students. For instance, a high prevalence of poor sleep hygiene have been found among Nigerian children aged 2 – 12 in kindergarten, primary and junior secondary class one [21]. If this high prevalence is not addressed, there is a high risk of the children carrying the effect of this poor sleep hygiene over to adolescence and adulthood. This high level of poor sleep hygiene could have resulted to another observation by the same authors [22] who reported a prevalence of headache and migraine among secondary school students in the same Benin City where the aforementioned research on among 2 – 12 year olds was carried out. It has been found that among the major causes of migraine among secondary school students includes emotional stress and sleep deprivation [22]. A high prevalence of sleep disorders have been found among children with neurological disorder in Nigeria [23]. The children 17 years and below reported among other sleep disorders, excessive daytime sleepiness (53.3%). They noted the possibility of cognitive development impairment and low quality of life among these children.

The relationship between BFS, sleep, and beliefs about sleep among sufferers of BFS has not been investigated in Nigeria and other countries according to a diligent electronic search of literature. Finding out more about this relationship has potential clinical benefits for this population of students. This study therefore examines the relationship between BFS, sleep and beliefs about sleep in a sample of Nigerian secondary school students.

Methods

Five hundred senior secondary school students were recruited by simple random sampling, using odd and even technique from six secondary schools in Ile-Ife after obtaining written informed consent from the students and their parents. The principals and teachers of the schools involved were also formally informed and their consent and approval were also obtained. Research and Ethical Committee of Obafemi Awolowo University Teaching Hospitals Complex, Ile-Ife, approved the study protocol, after which the permission to carry out the study was obtained from the Local Inspectors of Education in charge of the six schools. Before the administration of the instruments to the selected participants, they were told that: (a) their participation was voluntary and there was no foreseeable risk in participation (b) those who refuse to participate would not be penalised or have loss of benefits (c) they should not liaise with each other in answering the questions and any question they might have should be directed to the researcher and (d) this was not a test, and they should answer the questions honestly.

They were then administered a battery of instruments detailing socio-demographic data, Brain Fag Syndrome Scale [24], selected items of Pittsburgh Sleep Index [25] and Beliefs and Attitude about Sleep Questionnaire [13]. The BFSS is a 7-item scale with 3 possible responses (often, sometimes and never with scores 2, 1 and zero) respectively to each item and scores obtainable range from 0 – 14. For caseness, there must be a minimum total score of 6 which must include at least a score of 1 on each of the items 4 and 5 on the other hand. Items 4 and 5 are concerned with the presence of bodily symptoms such as crawling sensation or heat in the head and interference of those bodily symptoms with study. The validity of the scale rests squarely on the construct of the syndrome [24,26,27]. From an empirical factor analysis, the BFSS has been found to have a 2 factor structure and a Cronbach alpha coefficient of 0.521 [28]. The BFS has also been found to be significantly correlated with another measure of brain fag, the Brain Fag Propensity Scale (BFPS) [29].

The PSQI is a self rated questionnaire which assesses sleep quality and disturbances over a month interval. Nineteen individual items generate seven 'components' scores: subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping medication and daytime dysfunction. The sum of scores from these seven components yields one global score. A global PSQI score greater than 5 has been found to yield a diagnostic sensitivity of 89.6% and a specificity of 86.5% (kappa = 0.75; p < 0.001) in distinguishing good and poor sleepers. PSQI has utility in both psychiatric clinical practice and research activities. The PSQI has good validity and reliability with Nigerians [30]. The PSQI consists of ten items each with three possible responses – true, maybe, or false. It assesses positive or negative beliefs and attitudes about sleep.

The data was analysed with the Statistical Package for the Social Sciences (SPSS) for Windows version 15 [31]. The analysis was based on the total number of respondents. For scales and questions with defined categories, frequencies and percentages were calculated for each of the dimensions of BFS, Sleep patterns, and study habits. The Chi Square and student t-test were used to test for the differences in the responses between the groups (BFS and non BFS cases). All the tests were two-tailed and the level of significance was set at 0.05.

Results

Demographics

The age range of the respondents was between 12 and 24 years; their mean age was 15.5 years (S.D, 1.5). A slightly higher proportion of the respondents were females (53.2%) with a male to female ratio of 1:1.1. Majority were Christians (81.6%) and from monogamous homes (75%). About nine out of ten respondents lived with their parents.

Socio-demographic Characteristics BFS and non BFS cases

There was no significant difference between

BFS cases and non cases on socio-demographic characteristics as shown in Table 1.

Table 1. Comparison of BFS and Non-BFS on Sleep Variables: Duration, Categories, Quality and Insomnia.

Variable		BFS	Non- BFS	Total	Significance
Sleep Duration	**Mean (SD)** Range	5.8hrs (±1.1) 4 – 9 hrs	5.9hrs (±1.1) 4-10hrs		t = 1.96 df = 498 p = 0.35
	4 –7hrs	182 (40.5)	267(59.5)	448 (89.8)	t =0.898 df = 447 p > 0.05
	7.1-10hrs	19(37.3)	32(62.7)	51(10.2)	t = -2.667 df = 49 p < 0.05
	Total	201(100)	299(100)	100 (100)	
Sleep Types	Early bed/rise Early bed/late rise Late bed/early rise Late bed/late rise Total	89 (44.3) 7 (3.5) 103 (51.2) 2(1.0) 201(100)	101(33.8) 11(3.7) 172(57.5) 15(5.0) 299(100)	190(38.0) 18(3.6) 275(55.0) 17(3.4) 500(100)	X^2=10.08 df = 3 p < 0.05
Sleeps Quality (%)	Good Poor Total	144(71.6) 57(28.4) 201(100)	278(96.0) 12 (4.0) 299(100)	431(86.2) 69(13.8) 500(100)	X^2= 88.04 df = 3 p < 0.01
Insomnia ***Early***	Not at all	87(43.3)	135(45.2)	222(44.4)	t= ***-3.627,*** p<0.05
	<Once a week 1-2 a week	51(25.4) 49(24.4)	95(31.8) 54(18.1)	146(29.2) 103(20.6)	t = 0.78 P <0.05
	≥ 3 a week	14(7.0)	15(5.0)	29(5.8)	t = - 0.1852 p > 0.05
Middle	Not at all	63(31.3)	103(34.4)	166(33.2)	t= - 2.605 df= 498 p < 0.05
	Yes	138(68.7)	196(65.6)	196(65.6)	t= - 8.804 df= 498 p < 0.05
	Total	201(100)	299 (100)	500 (100)	

Comparison of Sleep parameters and beliefs between BFS and Non BFS cases

The mean duration of sleep for students with BFS was 5.8 hrs (S.D = 1.1) and for students without BFS 5.9 hrs (S.D = 1.1). No significant difference was observed between the mean sleep duration of students with BFS and students without BFS (t = 1.96; df = 498; p = 0.35). Participants were regrouped into two classes. Group 1 (less than 6hrs of sleep) and group 2 (above 6hrs of sleep). About two in every five (40.5%) students with BFS had less than 6 hrs of sleep compared with three out of every five (59.5%) students without BFS (t = -0.898; df = 447; p = 0.37). On the other hand, one hundred and eighty two (37.3%) BFS students slept above 6 hrs a day compared with 32 (62.7%) of non BFS students (t = -2.667; df = 49; p = 0.657). A significantly higher proportion of students with BFS (44.3%) were in the category of early to bed early to rise compared with 33.8% of students without BFS (X^2 = 7.324, df = 3, p = 0.007).

Sleep quality was regrouped into two classes. "Very good" or "fairly good" sleep quality was regrouped as "good" while "fairly bad" or "very bad" was regrouped as "bad". One hundred and forty four (71.6%) BFS students reported they had good sleep quality. Among the students without BFS, 267 (96.0%) reported good sleep quality. About one in three of every student with BFS, however, reported having poor sleep quality compared with four in one hundred of students without BFS (Odds Ratio = 9.47; C.I = 4.81 to 19.93; p = 0.001). (X^2 = 59.89)

Insomnia

A higher proportion of students either with BFS or without BFS experienced early insomnia. About 57% of BFS cases experienced early insomnia while about 55% of non BFS cases experienced early insomnia. The difference is not significant (X^2 = 2.019; df = 1; p = 0.155). About 69% of BFS students had experienced middle insomnia while close to 66% of non BFS students had experienced middle insomnia. This difference is significant (Fisher's exact P = 0.499).

Beliefs about Sleep

There was no significant difference between students with BFS and those without BFS concerning beliefs about sleep except one. A higher proportion of students with either BFS or without BFS believed that one needs 8hrs of sleep daily; that nervous break-down follows sleep deprivation; and that if one does not sleep well one cannot function the next day possibly; and that poor sleep results in feeling depressed, irritable or anxious. There was a significant difference in their beliefs that one needs to nap to catch up lost sleep. A higher proportion of students without BFS did not believe that one needs to nap to catch up lost sleep (X^2 = 9.63; df = 2; p < 0.008) as shown in Table 2.

Table 2. Comparison of BFS and Non BFS on Beliefs about Sleep

Beliefs		BFS	Non BFS	Total	Significance
Need 8hrs of Sleep	True Maybe False ***Total***	82 (40.6) 56(30.5) 62(31.0) 200(100)	121 (40.6) 91(30.5) 86(28.9) 298(100)	203 (40.8) 147(29.5) 148(29.7) 498(100)	$X^2 = 0.45$ df= 2 p = 0.79
Nap to catch up lost sleep	True Maybe False ***Total***	66(32.9) 52(25.9) 83(41.3) 201(100)	64 (21.4) 106(35.5) 129(43.1) 299(100)	130 (26.0) 158(31.6) 212(42.4) 500(100)	$X^2 = 9.63$ df= 2 p<0.008
Nervous break down follows sleep deprivation	True Maybe False *Total*	95(47.3) 59(29.4) 47(23.4) 201(100)	142(47.5) 73(24.4) 84(28.1) 299(100)	237(47.4) 132(26.4) 131(26.2) 500(100)	$X^2 = 2.13$ df= 2 p= 0.345
If I don't sleep well I can't function next day possibly	True Maybe False ***Total***	95(47.3) 49(24.4) 57(28.4) 201(100)	125(41.8) 86(28.8) 88(29.4) 299(100)	220(44.0) 135 (27.0) 145(29.0) 500(100)	$X^2 = 1.717$ df= 2 p= 0.424
Poor sleep results in feeling depressed, irritable or anxious	True Maybe False ***Total***	73(36.3) 60(29.9) 68(33.8) 201(100)	109(36.5) 88(29.4) 102(34.1) 299(100)	182(36.4) 148(29.6) 170(34.0) 500(100)	$X^2= 0.011$ df= 2 p = 0.995

Predictors of BFS

Direct logistic regression was performed to assess the impact of a number of factors on the likelihood of predicting BFS. The model contained five independent variables (nap to catch up lost sleep; poor sleep results in feeling depressed, irritable or anxious; early insomnia; middle insomnia; and sleep quality). The full model containing these predictors was statistically significant χ^2 (8, N = 500) = 10.347; p < 0.01 indicating that the model was able to distinguish between respondents who had BFS and those who did not. The model as a whole explained between 3% (Cox and Snell R square) and 5% (Nagelkerke R square) of the variance in BFS status and correctly classified 59.8% of cases. The model showed that only belief that nap to catch up lost sleep made a statistically significant contribution to the model with the odds ratio of 0.816. The OR of 0.816 was less than 1, indicating that BFS respondents were 0.816 times less likely to endorse the belief of nap to catch up lost sleep, controlling for other factors in the model.

Table 3. Logistic Regression Predicting likelihood of BFS

Variables	B	S.E.	Wald	*df*	α	Odds Ratio	95% OR C.I.	
							Lower	Upper
Early insomnia	0.011	0.208	0.003	1	0.959	1.011	0.673	- 1.519
Middle insomnia	0.123	0.221	0.311	1	0.577	1.131	0.733	- 1.745
Sleep Quality	0.095	0.385	0.060	1	0.806	1.099	0.517	- 2.338
Nap to catch Up lost sleep	-0.403	0.143	4.232	1	0.047	0.816	0.481	- 0.886
Poor sleep result in feeling depressed irritable or anxious	0.028	0.227	0.015	1	0.902	1.028	0.659	- 1.603
Constant	0.434	1.086	0.160	1	0.689	1.544		

(B = Beta, S.E. = Standard error, df = degree of freedom, α = Level of Significance)

Discussion

One major finding in our study is that BFS students did not differ significantly from non BFS students in sleep duration. Both groups of students had insufficient sleep duration. However, a significant proportion of BFS students were early to bed early to rise. The BFS students had been documented to have high achievement orientation [24]. They were highly motivated to study. They therefore would go to bed early in order to wake up early to read. Their high neuroticism made them prone to being anxious to wake up and read. Their anxiety proneness could possibly affect their quality of sleep they would have. It is not at all surprising that a significantly higher proportion of them also reported having poor sleep quality compared with non BFS students.

Morakinyo [16] presented his psycho-physiological theory of BFS by carrying out a clinical investigation of 20 established cases of the Brain Fag Syndrome among the students of University of Ife (now Obafemi Awolowo University, Ile-Ife). He found that BFS sufferers had a very intense drive for achievement and that behind this drive was an anxiety related to the outcome of the educational programme on which the students were engaged. This anxiety made the students adopt a system of study which led to sleep deprivation with use of stimulants to stay awake. The sleep deprivation in turn created an abnormal psycho-physiological state in them including cognitive dysfunction. This cognitive dysfunction also constituted a severe threat to their ambition and in turn led to a generation of more tension. A vicious cycle was therefore established which eventually led to BFS.

He had previously found that BFS patients had higher scores on the neuroticism-stability dimension of the Eysenck Personality Inventory (EPI) but not different on the Extraversion-Introversion dimension. He therefore concluded that BFS was the consequence of interplay of psychological and physiological factors in a person of nervous predisposition. The physiological factors identified included sleep deprivation and psycho-stimulant use while the

psychological factor included achievement motivation.

The psycho-physiological theory adequately explains the cognitive deficits, the study difficulty and the use of stimulants found in BFS patients. It also explains the appreciable degree of BFS among learners in terms of stress, and sleep deprivation among other factors.

Another important finding is that students with BFS had positive knowledge about sleep deprivation and its consequences. However, there is a gap between their beliefs and their behaviour. BFS Students believed that one needs 8hrs of sleep daily; that nervous break-down follows sleep deprivation; and that if one does not sleep well one cannot function the next day possibly; and that poor sleep results in feeling depressed, irritable or anxious. Despite these beliefs, they still had less than 6 hrs of sleep daily, less than the healthy range of 8-9 hours [2]. This gap in belief translating to practice has clinical implications for BFS students particularly. The anxiety and worries about failure and their high achievement orientation are more powerful factors that predict their sleep behaviour than beliefs. This may be of clinical importance in counselling BFS students. However, more clinical studies are needed to confirm this. Objective sleep studies on BFS students would likely reveal sleep fragmentation or reduced amount of slow wave sleep or reduction in REM sleep.

Interestingly, our finding among secondary school students in Nigeria is similar to a finding of mean sleep duration of 6.2 hours of night-time sleep for Nigerian undergraduate students[32]. Non restorative sleep and intra-night awakening have also been found to be frequent among Nigerian undergraduates [32] and also similar to the mean sleep time of 6.02, 5.62, and 4.86 for 10th, 11th, and 12th graders respectively in Korean teenagers [33].

Authors are in concurrence on the efficacy of Cognitive Behaviour Therapy (CBT) in the treatment of the misconceptions and beliefs shared by insomnia sufferers about insomnia and sleep [34,35]. Some of these misconceptions

could be corrected through CBT. More recently, an offshoot of CBT, Cognitive Behavioural Treatment for Insomnia (CBT - I) [36] has been described by the National Sleep Foundation [37] as an efficient treatment procedure for insomnia where sleep restriction, stimulus control instructions, sleep hygiene education and relapse prevention are integrated in assisting the patient adjust.

In countries like the United States of America, few schools have taken into consideration the biological sleeping times of high school students [38,39]. In the schools that did, there appeared to be many positive impacts. When classes start later in the morning, there is less sleep deprivation and sleep quality is better [40,41]. The behaviour of early to bed early to rise might change if schools adopt a starting time policy that considers the biological sleeping times of high school students. Attendance has also been shown to improve as well as delayed sleep onset, longer sleep duration, daytime alertness and better grades among students with late class starting times [38,39,42].

From preliminary investigations, it appears that students are showing great signs of improvement where educational policy has considered adolescents' sleep patterns vis a vis academic performance [38, 39]. In these places, students reported they felt less tired and more competent to take on difficult tasks. This is in support of the findings that uninterrupted sleep is important for human beings to experience periods of rapid eye movement (REM) necessary for learning, problem solving and storing memories [43, 44]. For students with BFS, alteration in school time table would have positive impact on their sleep quality and consequently their learning, problem solving and memories.

Conclusion

This study has provided preliminary baseline data on the sleep behaviour, BFS and beliefs about sleep among secondary school students in Nigeria. This study suggests the need for BFS students in Nigeria to adjust their sleep patterns and habits in order to forestall clinically significant psychological breakdown and

impairment in cognitive functioning and suggests that alteration in school time table for students with BFS would impact positively on the learning outcomes.

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REVIEW ARTICLE

COGNITIVE MARKERS IN SCHIZOPHRENIA PRODROME: A REVIEW

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Abstract

Objective: **This article aims to review findings from studies conducted in prodromal subjects using cognitive domains as potential markers for predicting psychosis and/or schizophrenia.** *Methods:* **A total of 49 studies dealing with prodromal subjects were selected, out of which 9 were Genetic/Family High Risk studies, 1 was a birth cohort, 8 used ultra High Risk (UHR) screening criteria, 4 used Basel Screening Instrument Psychosis scale (BSIP), 2 used the Bonn Scale for the Assessment of Basic Symptoms (BSABS), 2 used the Early Recognition Inventory/Interview for the Retrospective Assessment of the Onset of Schizophrenia (ERIraos), 1 used the Comprehensive Assessment of At Risk Mental States (CAARMS), 10 used the Structured Interview for Prodromal States/Scale of Prodromal Symptoms (SIPS/SOPS) and 11 used a combination of screening instruments.** *Results:* **Cognitive precursors such as verbal memory, attention, executive function, working memory, olfactory identification and intelligence have been found to be replicable though not always consistently across studies. There are many differences between the various studies not only in terms of their subjects' profiles but also regarding the cognitive tests used and the duration of the study.** *Conclusion:* **A standardized agreement of the high-risk group criteria and cognitive tests used needs to be put forward. Moreover, the duration of the study investigating Ultra High Risk groups should be of at least one year period.** *ASEAN Journal of Psychiatry, Vol. 13 (2): July – December 2012: 176-196.*

Keywords: Cognition, High-Risk, Psychosis, Prodrome, Schizophrenia

Introduction

Cognitive deficits are considered as core features of the pathophysiology of psychotic disorders and schizophrenia [1, 2]. The prodromal period of psychotic disorders including schizophrenia has been documented since the first descriptions of the illness [3]. Currently, it is described as per Yung and McGorry (1996) as being an early or prepsychotic state representing a deviation from the usual behaviour and experience of a person [4]. Despite the non-specificity of the prodromal symptoms and great variability in prodromal manifestations amongst patients, certain symptoms and signs have been frequently described. Besides depressed mood, irritability, aggressive behavior, and suicidal ideations, cognitive deficits and deterioration in social functioning are also common.

Amongst the cognitive deficits, reduced attention and concentration have been commonly described as a prodromal symptom in retrospective studies of schizophrenia and schizophreniform disorders [5]. According to some studies, cognitive deficits appear in childhood preceding its manifestation as adult schizophrenia [3, 4]. In spite of the difficulty posed in identifying patients in the prodromal period, it is believed that early detection would lead to early intervention hence minimizing disability and improving prognosis. Patients in the prodromal period have been termed differently in different studies. For instance, the Melbourne Personal Assessment and Crisis Evaluation Clinic (PACE) used the term "ultra high-risk group" (UHR), the German "Früh-Erkennungs und Therapie-Zentrum für Psychische Krisen" (FETZ services) subdivided the prodromal population into 2 distinct groups namely "early prodromal state" (EPS) and the "late prodromal state" (LPS) while the New York Recognition and Prevention Program (RAP) opted for the term group "Clinical High Risk" (CHR). It should be noted that the characteristics of the prodromal group differ from studies but they all consisted of a defined set of symptoms lasting for a defined period of time accompanied with either a decline in social function and/or a positive family history of psychotic disorders.

Studies investigating prodromal subjects have found promising markers in domains such as working memory [5,6], IQ [7, 8], verbal memory [6, 9] and executive function [8, 10]. Moreover, it is important to distinguish between the terms "endophenotypes" and "biological markers". An endophenotype [11] is characterized by: (a) differentiation from people with and without psychosis; (b) seen independent of the state of disease; (c) is heritable such that first-degree relatives have higher rates than the general population. Biological markers [12] on the other hand, are termed state markers when present only during the acutely ill state and when they are always present they are called trait markers. Also, biological markers need not be genetically or environmentally determined.

This review aims to compare the main cognitive findings in recent studies between high-risk or at-risk groups and their relevance to conversion of psychosis and schizophrenia.

Methods

Pubmed, Medline, Scirus and PsychINFO were searched using the following search terms: cognition, social cognition, ultra high risk, genetic high risk, at-risk mental states, clinical high risk, birth cohorts, and basic symptoms. The reference lists of published studies and reviews were also screened for any relevant publications and included in this review.

Inclusion criteria

Only those studies with clearly defined screening assessment of the prodromal groups, and which reported cognitive findings were included in this review. There was no restriction as per to publication dates, sample age and length of studies. Articles not written in English were excluded. The approaches used to investigate cognitive deficits prior to disease onset can be based on the clinical presentation or characteristics of the group of patients or on the psychopathological instruments used for the early detection of schizophrenia. In this review, these 2 approaches have been merged and the data collected form various studies are presented in Table 1.

Table 1. General Intelligence in Schizophrenia Prodrome

Cognitive domain	Study/Program	N	Mean Age/ Year of birth	Follow-up/ Transition rate
General intelligence				

Low IQ	Reider et al.[24](1977) BNCPHRS Family High Risk	UHR: 60	1959-1966	0-7 years
UHR-P poor in arithmetic	Brewer et al.[26] (1998) PACE UHR criteria	UHR: 65 HC: 24	N/A	12-18 months 21 UHR-P
Impaired	Byrne et al.[27] (1999) EHRS Family High Risk	UHR: 104 HC: 33	21.1 (2.3)	Launched in 1994
Low IQ	Goldstein et al.[28] (2000) BNCPHRS Family High Risk	UHR: 182 HC: 165	1959-1966	0-7 years
Impaired	Davalos et al.[34] (2003)	UHR: 51 HC: 51	Range: 6-15yrs	Baseline
Impaired	Hawkins et al.[35] (2004) PRIME SIPS/SOPS	UHR: 36	19.8 (4-7)	N/A
Impaired	Brewer et al.[36] (2005) PACE UHR criteria	UHR: 98 HC: 37	19.4 (4.0)P 20.0 (3.6)NP 20.7 (4.3)	12 months
Poor in schizophrenia group	Sørensen et al.[40] (2006) CHRS Family High Risk	UHR :311	15.1 1942-1952	10-48 years
Impaired	Pflueger et al.[48] (2007) FEPSY BSIP criteria	UHR: 60 HC: 51	27.2 (8.7) 23.4 (4.9)	Baseline
Low verbal IQ in UHR-P	Pukrop et al.[49] (2007) FETZ BSABS criteria	UHR: 83 HC: 44	23.2 (5.4)P 24.9(5.3)NP 25.1 (3.2)	36 months 44 UHR-P
UHR-P more impaired	Eastvold et al.[52] (2007) CARE SIPS + own criteria	UHR: 40 HC: 36	20.8 (3.5) 21.8 (3.4)	12 months 5 UHR-P
Impaired

Impaired verbal IQ | Keshavan et al.[57] (2010) PREP SCID-I/K-SADS/CPPS Woodberry et al.[58] (2010) PIER COPS criteria | UHR: 75 HC: 82

UHR: 73 HC: 34 | 15.7 (3.3) 15.9 (3.0)

16.5 (2.7) 16.2 (2.5) | N/A

Baseline 13 UHR-P |
| Impaired | Reichenberg et al.[60] (2010) DMHDS Birth cohort | 1,037 | 1972-1973 | 3-26 years 35 future schizophrenia cases |

Table 2. Memory in Schizophrenia Prodrome

Cognitive domain	Study/Program	N	Mean Age/ Year of birth	Follow-up/ Transition rate
Memory				
Impaired	Brewer et al. [26] (1998) PACE UHR criteria	UHR: 65 HC: 24	N/A	12-18 months 21 UHR-P
Impaired	Byrne et al. [27] (1999) EHRS Family High Risk	UHR: 104 HC: 33	21.1 (2.3)	Launched in 1994
Verbal memory impairments	Erlenmeyer-Kimling et al.[29] (2000) NYHRP Family High Risk	UHR: 136 HC: 133	1959-1972	Launched in 1971
Verbal & visual memory deficits	Hambrecht et al. [30] (2002) FETZ BS criteria	UHR: 29 HC: 29	23.1 (4.4) 24.0 (3.0)	12-15 months 5 UHR-P
Verbal memory impairments in UHR-P	Schall et al. (2003) PAS UHR criteria	UHR: 103	N/A	12-36 months 62 UHR-P
Impaired visual and verbal memory in UHR-P	Brewer et al. [36] (2005) PACE UHR criteria	UHR: 98 HC: 37	19.4 (4.0)P 20.0 (3.6)NP 20.7 (4.3)	12 months
Impaired visual reproduction	Koutsouradis et al.[38] (2005) PACE UHR criteria	UHR: 16 HC: 17	N/A	12-18 months 21 UHR-P
Impaired verbal memory predicted conversion to schizophrenia	Johnstone et al.[39] (2005) EHRS Family High Risk	UHR :147 HC : 7	21.2 (3.0) 21.2 (2.4)	Launched in 1994
Verbal memory impairments	Lencz et al. [41] (2006) RAP	UHR: 38 HC: 39	16.5 (2.2) 15.8 (2.6)	6-12 months 12 UHR-P
in UHR-P Impaired verbal memory	SOPS criteria Niendam et al. [45] (2006) CAPPS SIPS/COPS criteria	UHR: 45	17.7 (4.0)	Baseline
Impaired	Myles-Worsley et al. [46] (2007) PEPS Y-PARQ criteria	UHR: 310 HC: 99	16.9(2.1)GH 17.2(1.2)GL	Baseline
Visual reproduction	Wood et al. [47] (2007) PACE	UHR: 16	17.3 (2.8)P 21.0 (3.1)NP	12-18 months

impaired in UHR-P	UHR criteria	HC: 17	19.7 (2.4)	
UHR-P impaired in verbal memory	Pukrop et al. [49] (2007) FETZ BSABS criteria	UHR: 83 HC: 44	23.2 (5.4)P 24.9(5.3)NP 25.1 (3.2)	36 months 44 UHR-P
UHR-P more impaired	Eastvold et al. [52] (2007) CARE SIPS + own criteria	UHR: 40 HC: 36	20.8 (3.5) 21.8 (3.4)	12 months 5 UHR-P
LPS more impaired in verbal memory	Hurlemann et al. [53] (2008) GNRS ERIaos criteria	UHR: 36 HC: 30	27.3 (5.1)EPS 26.8 (6.2)LPS 28.2 (6.4)	Baseline 3 EPS & 5 LPS turned psychotic
UHR-P impaired in verbal memory	Woodberry et al. [58] (2010) PIER COPS criteria	UHR: 73 HC: 34	16.5 (2.7) 16.2 (2.5)	Baseline 13 UHR-P
Impaired verbal memory	Seidman et al. [59] (2010) NAPLS SIPS/SCID-I criteria	UHR: 304 HC: 193	18.9 (3.9) 17.8 (5.2)	Baseline
Impaired verbal memory	Kyung et al. [61] (2011) SIPS/COPS criteria	UHR: 27 HC: 33	19.9 (3.9) 19.7 (3.8)	Baseline
UHR-P impaired visual memory	Hee Sun et al. [62] (2011) CAARMS/ SIPS/ modified BPRS	UHR: 49 HC: 45	21.0 (4.8)P 21.1 (3.6)NP 22.7 (3.5)	5.2 years 13 UHR-P

Table 3. Attention in Schizophrenia Prodrome

Cognitive domain	Study/Program	N	Mean Age/ Year of birth	Follow-up/ Transition rate
Attention				
Impaired	Mirsky et al. [25] (1995) IHRS Family High Risk	UHR: 50 HC : 50	32 years 1952-1959	25 years
Impaired	Brewer et al. [26] (1998) PACE UHR criteria	UHR: 65 HC: 24	N/A	12-18 months 21 UHR-P
Attention deficits predicted conversion to schizophrenia	Erlenmeyer-Kimling et al. [29] (2000) NYHRP Family High Risk	UHR: 136 HC: 133	1959-1972	Launched in 1971
Impaired	Gschwandtner et al. [33](2003) FEPSY BSIP criteria	UHR: 32 HC: 32	26.5 (8.8) 25.5 (4.4)	Baseline only
Impaired	Hawkins et al. [35] (2004) PRIME SIPS/SOPS criteria	UHR: 36	19.8 (4-7)	Not reported
Impaired	Francey et al. [37] (2005)	UHR: 70	20.9P	12 months

	PACE UHR criteria	HC: 51	19.9NP 23.3	
Impaired	Gschwandtner et al. [43] (2006) FEPSY BSIP criteria	UHR: 40 HC: 42	27.9 (9.1) 25.9 (5.2)	Baseline only
Impaired	Myles-Worsley et al. [46] (2007) PEPS Y-PARQ criteria	UHR: 310 HC: 99	16.9(2.1)GH 17.2(1.2)GL	Baseline
Developmental lags in pre-schizophrenic	Reichenberg et al. [60] (2010) DMHDS Birth cohort	1,037	1972-1973	3-26 years 35 future schizophrenia cases
Impaired	Kyung et al.[61] (2011) SIPS/COPS criteria	UHR: 27 HC: 33	19.9 (3.9) 19.7 (3.8)	Baseline

Table 4. Working Memory in Schizophrenia prodrome

Working memory				
Impaired	Wood et al. [32] (2003) PACE UHR criteria	UHR: 38 HC: 49	18.3 (3.2)P 19.7 (2.8)NP 20.3 (2.7)	12-24 months 9 UHR-P
Impaired	Davalos et al. [34] (2003) K-SADS-PL criteria	UHR: 51 HC: 51	Range: 6-15yrs	Baseline
Imapired	Lencz et al. [41] (2006) RAP SOPS criteria	UHR: 38 HC: 39	16.5 (2.2) 15.8 (2.6)	6-12 months 12 UHR-P
Impaired spatial working memory	Smith et al. [42] (2006) RAP SOPS criteria	UHR: 8 HC: 10	16.3 (2.6) 16.6 (2.9)	Baseline only
Impaired	Gschwandtner et al. [43] (2006) FEPSY BSIP criteria	UHR: 40 HC: 42	27.9 (9.1) 25.9 (5.2)	Baseline only
Poor performance	Keefe et al. [44] (2006) PRIME COPS/SIPS criteria	UHR: 37 HC: 21	24.2 (5.4) 20.7 (5.4)	12 months 11 UHR-P
Impaired	Pflueger et al. [48] (2007) FEPSY BSIP criteria	UHR: 60 HC: 51	27.2 (8.7) 23.4 (4.9)	Baseline
UHR-P impaired	Pukrop et al. [49] (2007) FETZ BSABS criteria	UHR: 83 HC: 44	23.2 (5.4)P 24.9(5.3)NP 25.1 (3.2)	36 months 44 UHR-P
UHR-P more impaired	Eastvold et al. [52] (2007) CARE SIPS + own criteria	UHR: 40 HC: 36	20.8 (3.5) 21.8 (3.4)	12 months 5 UHR-P
Impaired	Chung et al. [54] (2008) SYC	UHR: 33 HC: 36	Range: 16-29 years	Baseline

	CAARMS criteria			
UHR-P more impaired	Riecher-Rössler et al. [56] (2009) FEPSY BSIP criteria	UHR: 64	26.5 (6.8)P 26.2 (9.7)NP	7 years 21 UHR-P
UHR less impaired in spatial working memory	Keshavan et al. [57] (2010) PREP SCID-I/K-SADS/ CPPS	UHR: 75 HC: 82	15.7 (3.3) 15.9 (3.0)	N/A
Developmental lags in pre-schizophrenic	Reichenberg et al. [60] (2010) DMHDS Birth cohort	1,037	1972-1973	3-26 years 35 future schizophrenia cases
Impaired	Kyung et al. [61] (2011) SIPS/COPS criteria	UHR: 27 HC: 33	19.9 (3.9) 19.7 (3.8)	Baseline
UHR-P impaired	Hee Sun et al. [62] (2011) CAARMS/ SIPS/ modified BPRS	UHR: 49 HC: 45	21.0 (4.8)P 21.1 (3.6)NP 22.7 (3.5)	5.2 years 13 UHR-P

Table 5. Executive Functioning-Processing Speed in Schizophrenia Prodrome

Executive function-Processing speed				
Executive function deficits	Brewer et al.[26] (1998) PACE UHR criteria	UHR: 65 HC: 24	N/A	12-18 months 21 UHR-P
Poor performance	Schall et al. [31] (2003) PAS UHR criteria	UHR: 103	N/A	12-36 months 62 UHR-P
Impaired executive function	Gschwandtner et al. [33] (2003) FEPSY BSIP criteria	UHR: 32 HC: 32	26.5 (8.8) 25.5 (4.4)	Baseline only
Impaired	Hawkins et al. [35] (2004) PRIME SIPS/SOPS criteria	UHR: 36	19.8 (4-7)	Not reported
Impaired	Koutsouradis et al. [38] (2005) PACE UHR criteria	UHR: 16 HC: 17	N/A	12-18 months 21 UHR-P
Imapired	Lencz et al. [41] (2006) RAP SOPS criteria	UHR: 38 HC: 39	16.5 (2.2) 15.8 (2.6)	6-12 months 12 UHR-P
Impaired	Gschwandtner et al. [43] (2006) FEPSY BSIP criteria	UHR: 40 HC: 42	27.9 (9.1) 25.9 (5.2)	Baseline only
Impaired processing speed.	Keefe et al. [44] (2006) PRIME COPS/SIPS criteria	UHR: 37 HC: 21	24.2 (5.4) 20.7 (5.4)	12 months 11 UHR-P
Impaired processing speed	Niendam et al. [45] (2006) CAPPS	UHR: 45	17.7 (4.0)	Baseline

	SIPS/COPS criteria			
Impaired	Myles-Worsley et al. [46] (2007) PEPS Y-PARQ criteria	UHR: 310 HC: 99	16.9(2.1)GH 17.2(1.2)GL	Baseline
Impaired in UHR-P	Wood et al. [47] (2007) PACE UHR criteria	UHR: 16 HC: 17	17.3 (2.8)P 21.0 (3.1)NP 19.7 (2.4)	12-18 months
Impaired	Pflueger et al. (2007) FEPSY BSIP criteria	UHR: 60 HC: 51	27.2 (8.7) 23.4 (4.9)	Baseline
UHR-P impaired	Pukrop et al. [49] (2007) FETZ BSABS criteria	UHR: 83 HC: 44	23.2 (5.4)P 24.9(5.3)NP 25.1 (3.2)	36 months 44 UHR-P
LPS more impaired than EPS	Schultze-Lutter et al. [50] (2007) FETZ BSABS/SPI-A criteria	UHR: 102	23.7 (5.0)EP 24.1 (5.4)LP	Baseline
UHR-P more impaired	Eastvold et al. [52] (2007) CARE SIPS + own criteria	UHR: 40 HC: 36	20.8 (3.5) 21.8 (3.4)	12 months 5 UHR-P
Impaired executive function	Chung et al. [54] (2008) SYC CAARMS criteria	UHR: 33 HC: 36	Range: 16-29 years	Baseline
UHR more affected in psychomotor speed and verbal fluency than executive function	Keshavan et al. [57] (2010) PREP SCID-I/K-SADS/ CPPS	UHR: 75 HC: 82	15.7 (3.3) 15.9 (3.0)	N/A
Processing speed developmental lags in pre-schizophrenic	Reichenberg et al. [60] (2010) DMHDS Birth cohort	1,037	1972-1973	3-26 years 35 future schizoph-renia cases
Impaired executive function	Kyung et al. [61] (2011) SIPS/COPS criteria	UHR: 27 HC: 33	19.9 (3.9) 19.7 (3.8)	Baseline
UHR-P impaired executive function	Hee Sun et al.[62] (2011) CAARMS/ SIPS/ modified BPRS	UHR: 49 HC: 45	21.0 (4.8)P 21.1 (3.6)NP 22.7 (3.5)	5.2 years 13 UHR-P
EPS more impaired	Fromman et al. [63] (2011) GNRS ERIaos	UHR: 205 HC: 87	25.6 (6.1)EP 25.3 (6.4)LP 25.5 (4.4)	Baseline

Table 6. Social Cognition in Schizophrenia Prodrome

Social cognition				
Impaired executive function	Chung et al. [54] (2008) SYC CAARMS criteria	UHR: 33 HC: 36	Range: 16-29 years	Baseline
UHR more impaired than ES and HC	Couture et al. [55] (2008) PREDICT COPS/SIPS	UHR: 88 ES: 26 HC: 41	18.9 (4.6) 24.9 (5.1) 23.0 (5.9)	Baseline
UHR-P impaired	Hee Sun et al. [62] (2011) CAARMS/ SIPS/ modified BPRS	UHR: 49 HC: 45	21.0 (4.8)P 21.1 (3.6)NP 22.7 (3.5)	5.2 years 13 UHR-P

Appendix I

List of abbreviations used in Tables 1-5 (in alphabetical order):

BS: Basic Symptoms; BNCPPHRS: Boston and Providence cohorts of the National Collaborative Perinatal Project; BPRS: Brief Psychiatric Rating Scale; BSABS: Bonn Scale for the Assessment of Basic Symptoms; BSIP: Basel Screening Instrument Psychosis;

CAARMS: Comprehensive Assessment of At Risk Mental States ; CANTAB: Cambridge Neuropsychological Testing Automated Battery; CAPPS: Staglin Music Festival Center for the Assessment and Prevention of Prodromal States, UCLA Neuropsychiatric Institute; CARE: Cognitive Assessment and Risk Evaluation, University of California, San Diego; COPE: Center of Prevention and Evaluation, New York State Psychiatric Institute, Columbia; COPS: Criteria of Prodromal Symptoms; CPPS:Chapman Psychosis Proneness Scale

DMHDS: Dunedin Multidisciplinary Health and Development Study;

EPS: Early Prodromal State; ES: Early Schizophrenia;

FEPSY: Früherkennung von Psychosen, Basel, Germany; FETZ: Früh-Erkennungs und Therapie-Zenrtum für Psychotische Krisen, University of Cologne, Germany;

GH: Genetic High-risk; GL: Genetic Low-risk; GRNS: German Research Network on Schizophrenia;

HC: Healthy Control

K-SADS-PL: Kiddie Schedule of Affective Disorders and Schizophrenia, Present and Lifetime Version
LPS: Late Prodromal State

NYHRP: New York High Risk Project; NP: Non-Psychotic; N/A: Not available

P: Psychotic; PACE: Personal Assessment and Crisis Evaluation Clinic, Melbourne, Australia; PAS: Psychological Assistance Service, Newcastle, Australia; PIER: Portland Identification and Early Referral Program, Portland; PREDICT: multi-site study at University of Toronto, University of North Carolina and Yale University; PRIME: Prevention through Risk Identification, Management, and Education Clinic, Yale University;

RAP: Recognition and Prevention Program, New York

SIPS: Structured Interview for Prodromal Syndromes ; SOPS: Scale of Prodromal Symptoms; SPI-A: Schizophrenia Proneness Instrument, Adult version;

UHR: Ultra High Risk; UHR-NP: Ultra High Risk Nonpsychotic; UHR-P: Ultra High Risk Psychotic;

Y-PARQ: Youth Psychosis At Risk Questionnaire

Types of approaches and their rationale

Based upon symptoms or clinical presentation, five main subtypes were identified and are presented in this review: (i) "Ultra High-Risk" or "At-Risk Mental State" or "Clinical High Risk" approach: These studies have a relatively high rate of transition to illness over a short follow-up period [13]. They allow the examination of potential premorbid markers of psychosis and schizophrenia but it is to be noted that the high transition rate is dependent on "help-seeking" populations; (ii) "Basic symptoms Approach": This approach was put forward by the Germans under the rationale that cognitive, affective and social disturbances often manifest much before the onset of illness. However, up to 20% of individuals with Basic symptoms do not turn psychotic [14]; (iii) "Birth Cohorts" approach: These studies are a follow-up throughout a defined time period of a group of individuals born in the same year. The number of people identified with schizophrenia is relatively small in these cohorts and thus making these studies cost ineffective. However, data reported have shown that specific cognitive domains are affected since an early age [15]; (iv) "Genetic High-Risk" or "Family High Risk" approach: The advantage of such studies is that they are directed towards potential biological markers, as trait and not state, dependent variables for schizophrenia. However, there are drawbacks regarding sample size which is not representative of the population presenting with first-episode of schizophrenia as not all people with genetic risk of schizophrenia develop the illness [27]. Moreover, only around 10% of people with first- episode of psychosis have a positive family history [14]; (v) "Retrospective Approach": These studies give an insight into the various cognitive deficits long before the onset of illness. However, they are non-specific, and pose a problem in formulating hypotheses regarding the onset, course or nature of cognitive impairments.

Psychopathological instruments

A set of instruments have been put forward for the early recognition of schizophrenia. The most commonly used are: (i) Ultra High Risk (UHR) criteria [16] includes mild positive symptoms (Attenuated Positive Symptoms syndrome, APS) lasting at least 1 week, self-limiting brief psychotic episodes (Brief Limited Intermittent Psychotic Symptoms, BLIPS) lasting at least 1 week, functional deterioration on the Global Assessment of Functioning (GAF, 5th axis, DSM-IV) and a trait risk factor such as schizotypal personality disorder or a first degree relative with a history of psychotic disorder. The psychotic symptoms were measured by either the Brief Psychiatric Rating Scale (BPRS) or Comprehensive Assessment of Symptoms and History scale (CASH). Patients who fulfilled at least one of these criteria had a 40% probability of having a psychotic episode within one year [17]; (ii) Structured Interview for Prodromal Syndromes (SIPS) [18] consists of a DSM-IV schizotypal personality disorder checklist, the 19-item Scale of Prodromal Symptoms (SOPS) which has been subdivided into 4 main scales namely positive symptoms , negative symptoms, disorganization symptoms and general symptoms, the Criteria of Prodromal Symptoms (COPS) checklist, a positive family history of mental disorders and a version of the Global Assessment of Functioning (GAF). About half of prodromal patients developed schizophrenia within one year. It should be pointed out that in some studies the SIPS criteria were used a whole as described above, but in some, only the SOPS were used or only the COPS were used; (iii) Bonn Scale for the Assessment of Basic

Symptoms (BSABS) [19] is made of a cluster of symptoms referring to formal thought disorder, disturbances in speech, disorders of perception and movements. In some studies, the sample was subdivided into Early Prodromal State (EPS) and Late Prodromal State (LPS). The EPS met criteria defined by presence of one of the basic symptoms (occurring within the past 3 months, and once in the past year), a decline in social function as measured by the GAF (within the past year), first degree relative with schizophrenia or psychotic disorders or pre-natal or peri-natal complications and absence of attenuated or transient psychotic symptoms. On the other hand, the LPS were defined by presence of one symptoms from the APS present within the past 3 months, and or one symptoms from the BLIPS present for less than 1 week and resolving spontaneously; (iv) The Schizophrenia Proneness Instrument, Adult version (SPI-A) [20] has been combined with the BSABS or the SOPS in some studies. SPI-A is derived from the basic symptoms concept. It assesses the affective-dynamic disturbances, cognitive-attentional impediments, cognitive disturbances, disturbances in experiencing the self and surroundings, body perception disturbances, and perception disturbances. It also includes additional items dealing with thought disorders, movement disturbances and disturbances involving the sensory organs; (v) Comprehensive Assessment of At-Risk mental States (CAARMS) [21] is a semi-structured interview developed to measure subthreshold symptoms of the prodromal phase of psychotic disorders. It consists of 27 items which are further subdivided into 7 scales namely positive symptoms, negative symptoms, cognitive change, emotional disturbance, behavioral change, motor and/or physical changes, and general psychopathology. These symptoms are rated upon their severity, duration and frequency by the Brief Psychiatric Rating Scale (BPRS). One third of all patients meeting the CAARMS criteria had developed psychosis within one year; (vi) Basel Screening Instrument Psychosis (BSIP) [22] is a 46 item checklist that has been developed and based upon the DSM-III prodromal symptoms and other prodromal symptoms that have been derived form literature. It also includes prepsychotic

symptoms rated by the Brief Psychiatric Rating Scale and other factors such as social decline, drug abuse, past history of mental disorders, a family history (first or second degree relatives) with schizophrenia or psychoses, and age of less than 30 for female and less than 25 for male; (vii) Interview for the Retrospective Assessment of the Onset of Schizophrenia (IRAOS) [23] is a retrospective semi-structured interview using data provided by the patient, a key informant and clinicians' notes; (viii) Early Recognition Inventory/Interview for the Retrospective Assessment of the Onset of Schizophrenia (ERIraos) [23] is available as both an interview and a questionnaire and the items have been selected from the most suitable items from the IRAOS, BSABS, SIPS and CAARMS. It comprises of 110 signs subsumed in 12 symptom groups; (ix) Youth Psychosis At Risk Questionnaire (Y-PARQ) is a self-report questionnaire was derived from prodromal and early psychotic symptomatology as evaluated by the CAARMS and addition of a modified version of Kiddie-SADS-PL (Schedule of Affective Disorders and Schizophrenia for school age children, Present and Lifetime Version). The K-SADS-PL is a semi-structured interview that is designed to assess the current and past episodes of psychopathology in children and adolescents according to DSM-III-R and DSM-IV criteria. It also allows objective rating of the individual symptoms.

Other assessment scales that have been used in some studies include the Diagnostic Interview for Genetic Studies (DIGS), the Present Mental Examination (PSE), Chapmann Psychosis Proneness scale, behavioral scales such as Childhood Behavior Checklist (CBC), Rust Inventory of Schizotypal Cognitions (RISC), and Structural Interview for Schizotypy (SIS) and personality assessment scales such as Kiddie Interview for Personality Syndromes (K-SKIPS).

Results

A total of 49 studies were identified and selected for this review, out of which 9 were Genetic/Family High Risk studies, 1 was a birth cohort, 8 used ultra High Risk (UHR) screening

criteria, 4 used Basel Screening Instrument Psychosis scale (BSIP), 2 used the Bonn Scale for the Assessment of Basic Symptoms (BSABS), 2 used the Early Recognition Inventory/Interview for the Retrospective Assessment of the Onset of Schizophrenia (ERIraos), 1 used the Comprehensive Assessment of At Risk Mental States (CAARMS), 10 used the Structured Interview for Prodromal States/Scale of Prodromal Symptoms (SIPS/SOPS) and 11 used a combination of screening instruments. Out of the 49 studies, 2 reported only olfactory deficits, 1 reported no significant differences between prodromal group and healthy control and 3 described non-significant differences between prodromal group and those who transited to psychosis. These studies were excluded from the tabular display. The positive cognitive findings have been tabulated into 6 tables under the following headings: general intelligence, memory, attention, working memory, executive function-processing speed, and social cognition. The term UHR was adopted to refer to all those prodromal subjects and UHR-P represent prodromal who turned psychotic or converted to schizophrenia in the tables and text below. The terms EPS and LPS was described above in text and are used as per that definition. Other abbreviations used in Tables 1-5 are described in Appendix I. It should be noted that the samples from studies from the same centers are not necessarily independent samples across these studies.

Discussion

The findings from these different studies are discussed under the sub-headings of the cognitive domains as described in results section.

General Intelligence

Intelligence is the ability to acquire, retain, and use experience, knowledge, understanding, judgment and reasoning in dealing with new experiences and solving problems. It has been found that the Ultra High Risk (UHR) had lower IQ as compared to the healthy controls. Erlenmeyer-Kimling et al., (2000) [29],

proposed that general intelligence might be influenced by "polygenic potentiators" rather than specific genotypes. Interestingly, in the EHRS39, the general IQ did not predict a formal diagnosis of schizophrenia. However, in a recent study, Seidman et al. (2008) found that children at age 7 years who later developed schizophrenia were more impaired in measures of attention [64]. This may suggest that intellectual decline starts at an early age in children prone to developing schizophrenia and that remains stable till the period of developing schizophrenia. Moreover, as pointed out by Woodberry et al. (2008) [65], there might be specific cognitive domains that are selectively impaired long before the onset of schizophrenia. Deficits in coding subset of the WISC test was suggested to be linked with perceptual motor speed or working memory processing speed impairment in those who later developed schizophrenia [40]. Two studies [49, 57] also reported that Ultra High Risk turned Psychotic (UHR-P) were characterized by poor performance in Verbal IQ. In a 30-year birth cohort, Reichenberg et al., (2010) [59], used the Wechsler Intelligence Scale for Children, Revised edition (WISC-R) to investigate prodromal subjects. Their findings revealed that conversion to schizophrenia was predicted by 2 models: the neurodevelopmental deficits theory and the developmental lag hypothesis. In the former model, by age 7 children who later developed schizophrenia were already impaired in reasoning, verbal and visual learning, and conceptualization. These deficits however remained stable throughout puberty. On the other hand, the developmental lag theory showed deficits in freedom from distractibility and visual-spatial problem solving subtests.

Memory

Memory can be assessed by verbal or nonverbal tasks. The verbal component is assessed via the presentation of stimuli such as words, digits, sentences or nonsense syllables that must then be recalled. Verbal memory was proposed as a phenotype in the NYHRP study for schizophrenia [29] with a prediction rate of up to 83% patients. Five other studies reported transition to psychosis from verbal memory

deficits [31, 36, 39, 41, 57]. It is to be noted that studies using logical memory subtests suggested impairments in prefrontal networks whereas those utilizing verbal paired associates showed intact hippocampal function [36, 41]. In a recent Genetic High Risk (GHR) study, Myles-Worsley et al., (2007) [46] identified verbal memory deficits in adolescents as a genetically mediated trait risk factor. Similarly in another study, Seidman et al., (2010) [59] also found that verbal deficits differentiated the UHR from the GHR. Late Prodromal State (LPS) subjects who share similar characteristics of the UHR sample, were found to have increased verbal memory deficits [63]. Lencz et al., (2006) [41] also found verbal memory impairments to be predictive of impending psychosis. Thus, to some investigators, verbal memory deficits represent a marker of disease progression which is largely independent of psychotic symptoms and remain stable over time [67]. Early Prodromal State (EPS) show more deficits in encoding than recall whilst LPS are more impaired in storing or retaining information. From a neuroanatomical point of view, LPS have a low hippocampal volume and thus supporting the storage and retention problems whereas EPS are able to make up for mediotemporal structural vulnerability [63]. Hurlemann et al., (2008) [53] using the Rey Auditory Verbal Learning Test (RAVLT) found greater deficits in delayed recall in the LPS. Delayed recall dysfunction could be due to disturbances in episodic encoding and/or retrieval related frontotemporal function. Finally, verbal memory could also be used to determine social outcome, and poor verbal memory performance is associated with poorer social functioning [45].

Visual memory deficits have been less frequently studied. It is believed to be a state dependent marker [68] and also impairments in visual recall have been observed in high-risk relatives [27]. This review found few significant findings related to visual memory and so is not discussed here.

Attention

Attention has been subdivided into 2 components by Luck & Gold [69]. They state that attention consists of "input selection" (requiring preferential selection of sources of input for processing" and "rule selection" (requiring selection among different rules that might dictate the ongoing process). Interestingly, attention was one of the first cognitive markers in predicting the transition to schizophrenia [25] in 58% of GHR children [29]. In a smaller sample, Keefe et al., (2006) [44] also reported attentional deficits coupled with a comparatively better performance on processing speed as a predictor of conversion to psychosis. However, attentional deficits proved to be non-specific in other studies [26, 31, 33, 37, 41, 43, 52, 61]. One explanation could be due to the use of different versions of the Continuous Performance Test (CPT). Pflueger et al., (2007) [48] argued that simpler versions of the CPT such as CPT-AX or CPT-OX solely measure sustained attention whilst more complex versions such as CPT-IP challenge the working memory of patients. The difficulty posed by attention as a separable cognitive domain can further be illustrated from the above definition of attention where the "rule selection" component is intrinsically linked with executive control and "input selection" is linked to working memory [69].

Working memory

Working memory refers to a storage system with limited capacity for maintaining and manipulating information on a temporary basis. The maintenance component includes tasks like spatial delayed response tasks or digit span forward tasks while the combined maintenance and manipulation component comprises of digit or spatial span backward tasks or letter number sequencing. It should be noted that the latter is more commonly impaired in schizophrenia [70] whilst Keshavan et al., (2010) [57] found less working memory deficits in UHR as compared to other domains, other investigators found more working memory deficits as characteristic of UHR [32, 34, 35, 42, 43, 46, 48, 54, 61] and even predictive of conversion to schizophrenia [41, 49, 56, 62]. Interestingly, the Early Prodromal State (EPS) were not impaired in working memory tasks while the Late Prodromal State (LPS) showed moderate impairment.

Smith et al., (2006) [42], reported that only spatial working memory was impaired in UHR and that non-working memory spatial tasks were intact. Thus, working memory as an endophenotype for schizophrenia needs further consideration.

Executive function-Processing speed

Executive function-Processing speed includes complex thought and action such as abstraction, reasoning, future planning, multi-tasking, problem solving and ability to modify behavior to adjust to inputs from the internal and external environment. The Wisconsin Card Sorting Test (WCST) and Trail Making Test (TMT) have been commonly used to assess executive functions. Some investigators have reported their findings as that of two separate domains, whereas others have merged it as one. In this review, they are considered as one single domain. There is evidence suggesting that executive performance is affected before the onset of psychosis or the Early Prodromal State (EPS) [63]. Similar findings have also been reported in 2 studies assessing children at ages 7 and 13 respectively [71, 72]. Many investigators agree on poor executive performance in UHR [26, 31, 33, 35, 43, 48, 50, 51, 52, 57, 59, 61] and some have even found execution-processing speed as a predictor of schizophrenia38,44,47,49,62. Niendnam et al., (2006) [45] also reported poor performance on reasoning and problem solving was associated with a poor Global Assessment Functioning (GAF) score. Moreover, it was found that Late Prodromal State (LPS) had more errors on WCST than the Early Prodromal State (EPS) [50]. This may indicate that as the disease progresses there is an increased risk in patients having poor executive performance.

Social cognition

This term has its origin in social psychology dating late 1960's and early 1970's. It represents a person's conceptualization of the self and others as well as the ability of using social judgments in decision making [73]. Most research in schizophrenia has been concentrated on the following subdomains of social cognition:

emotion processing and theory of mind, social perception, social knowledge and attributional bias. Few prodromal studies have utilized social cognition as a cognitive measure and the predictive value of social cognition remains ambiguous. Nevertheless social cognition deficits have been identified in 3 studies [54, 55, 62] where in 1 study [62] theory of mind task predicted conversion to schizophrenia. However, yet another more recent study, found no relationship between theory of mind tasks and social cognition [64]. Further studies are needed in this field.

Future directions and conclusions

Despite years of research on schizophrenia prodrome, cognitive markers are still in its infancy period. Future research in this field needs to address current limitations. These include a standardized consensus on the high risk criteria inclusion is necessary since there are different criteria used, the comparison of findings becomes difficult to interpret. The inclusion of an Early Prodromal State seems to be promising in differentiating cognitive deficits that might reflect a neurodevelopmental origin. Furthermore, Early Prodromal State and Late Prodromal State have different cognitive dysfunctions. There might be some advantage in including a Genetic High Risk group in the sample in view of identifying endophenotypes and gaining insight into the pathophysiology of the disease. This also implies that a standardized agreement also needs to be reached on the psychopathological instrument used for screening subjects such that different Early prodromal State, Late Prodromal State and Genetic High Risk are all included in the sample screening. Another important point is the inclusion of matched control groups to premorbid IQ and years of education which increases the reliability of the results.

Cognitive battery used for assessing cognitive domains varies considerably between studies. Moreover, some tests assess different domains (e.g., CPT-IP assessing not only attention but also working memory) at the same time and this may lead to impaired sensitivity and specificity. Since there is no international agreement on

which tests to use for which cognitive domain, interpretation of results becomes ambiguous (e.g., processing speed is considered as a separate domain to executive function in some studies, or verbal fluency is a measure of executive function in some and a separate domain in others). Cognitive domains may need to be broken down into subunits during assessment since when assessed as a whole, compensatory mechanism might mask the deficits in specific subunits. The National Institute of Mental Health has put forward a cognitive battery known as the Measurement And Treatment Research Improve Cognition Schizophrenia (MATRICS) which through a series of factor analysis has selected assessment of specific cognitive domains. These domains include speed of processing, attention/vigilance, working memory, verbal memory, visual learning, reasoning and problem solving and social cognition. The addition of social cognition is recent and many studies have neglected this aspect in schizophrenia prodrome. Although it is too early to comment on its predictive value, it might be an indicator of social outcome and interventions improving social cognition may reduce social dysfunction. Other domains, that have some promising value, are the olfactory identification and motor function, which are not regularly integrated in cognitive assessment of schizophrenia prodrome.

The role of behavioral tests has been highlighted in the EHRS study. The Structural Interview for Schizotypy (SIS) and Rust Inventory of Schizotypal Cognitions (RISC) could predict with some accuracy transition to psychosis. Future research should investigate the roles of these tests in schizophrenia prodrome.

The duration of studies plays an important role in identifying transition to psychosis. Riecher-Rössler and colleagues suggested in a recent 7 year longitudinal study that most transition to psychosis or schizophrenia occurred at 1 year interval and about 29% occurred after 1 year.

An ethical issue is still being debated as to labelling individuals as UHR. Since not all UHR turn psychotic, these individuals might be victim of the stigma of mental disorder. Moreover, with the growing interest in early intervention, these individuals might be unnecessarily prescribed antipsychotics and may be at risk of developing side-effects. Yet, some early intervention strategies such as cognitive behavioural therapy, family therapy and support for social skills and employment have shown promising results. Further research in schizophrenia prodrome would not only help in decreasing disease burden and disability rate but also provide insight into the disease aetiopathology.

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REVIEW ARTICLE

MENTAL HEALTH-RELATED EXPERIENCES AND CHALLENGES OF INFORMAL HIV/AIDS CAREGIVERS: A BRIEF REVIEW AND ANALYSIS

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Abstract

Objectives: **This paper mainly intended to review the experiences and challenges encountered particularly in mental health issues and to additionally analyze the methodologies used in studies involving HIV/AIDS informal caregivers.** *Methods:* **Four electronic databases; Science Direct, EBSCOhost, Ovid and Springer Link were searched for articles published in the past 10 years (2002 – 2012). Only full-text English articles related to research on care giving of HIV-infected adult patients were selected.** *Results:* **Twenty two out of 293 articles (7.5%) were reviewed, involving 2,765 caregivers in the USA (n=1,610), Africa (n=253), Asia (n=838) and Oceania (n=64) regions. A variety of age categories was involved in care giving with the youngest carer being 12 years old and the oldest, 60 years on average. Females and whites appeared to be dominant and 603 caregivers themselves were HIV-positive. The main outcomes measured were care giving burden, challenges and coping. Stress and depression, stigma and discrimination, insufficient support, role overload and extreme poverty were the main challenges experienced in care giving. Both qualitative (n=11) and quantitative (n=9) were the equally preferred types of study. Purposive sampling emerged as the most preferred sampling technique. Various instruments were utilized, but the Beck Depression Inventory (BDI) was the most popular particularly in quantitative studies.** *Conclusion:* **A variety of life aspects were negatively affected in the process of care giving for HIV/AIDS patients and studies of such nature commonly focused on caregivers' psychosocial burden.** *ASEAN Journal of Psychiatry, Vol. 13 (2): July – December 2012: 197-217.*

Keywords: HIV/AIDS, Caregivers, Mental Health, Stress and Depression

Introduction

Acquired Immune Deficiency Syndrome (AIDS) has become one of the most devastating diseases the community has ever faced since it was first identified and recognized over 30 years ago. As of 2010, it has been estimated that approximately 34 million people were living with the human immunodeficiency virus (HIV), with an estimation of 1.8 million deaths from AIDS-related causes worldwide [1]. South Africa is reported to be the most severely affected region in the world while India has the largest population living with the disease in Asia. Among the developed countries, the United States of America has the highest prevalence, reported to be at 0.6% [1].

It is generally known that HIV/AIDS is not just a health issue because it clearly affects many

other aspects of life. Individuals infected with by HIV are commonly struggle with negative psychosocial impacts such as poverty, stigma, discrimination and depression which can ultimately affect their health-related quality of life (HRQoL), hence influencing health outcomes. Unfortunately, the prevalence of HIV/AIDS related stigma was reported to be higher among individuals who incorrectly believe that casual contact with a person who has HIV/AIDS can cause the disease [2]. Mental health is also a prominent psychosocial factor affecting patient's HRQoL. For example, depression in HIV-positive individuals tend to influence patient's adherence to antiretroviral therapy [3,4].

The diagnosis of a chronic illness and its accompanying treatment impacted significantly on the person diagnosed as well as their family who were generally affected in various ways including their emotional, physical and also psychological well-being [5,6]. Many studies have demonstrated that family caregivers of HIV-infected patients are constantly suffered from significant stress and were associated with care giving burden [7,8]. Additionally, another closely related issue is linked to stigmatization. A few studies have revealed that stigma and discrimination were the most prevalent factors causing stress due to disclosure of the disease [9].

In countries facing severe HIV/AIDS epidemics, the majority of those who were infected and affected by HIV were already living in poverty. Some were forced to sell their properties to cover the high economic burden of treatment and other costs associated to HIV/AIDS [10]. Worse still, poverty would pass onto the next generation when the parents died and the orphaned children were sent to relatives for subsequent care and upbringing. Consequently, further income loss could threaten the ability to meet basic living needs such as food, education and access to healthcare.

In view of the numerous problems plaguing these caregivers, this paper intends to review and analyse relevant published articles which have studied on care giving experiences and challenges in HIV/AIDS. The specific objectives are: 1) to investigate the experiences and challenges particularly in mental health issues and 2) to examine the research methodologies used in studies on HIV/AIDS care giving.

Methods

Search strategy and selection criteria

Four electronic databases; Science Direct, EBSCOhost, Ovid and Springer Link were searched for articles published in the past 10 years (2002 – 2012). Combination of the following keywords was utilized to retrieve the articles: HIV/AIDS, family caregiver, care giving, burden, impact and barriers. The keyword-based screening strategy was based on articles which met the inclusion criteria whereby only full-text English articles related to research on care giving of HIV-infected patients were selected. Excluded studies were those published in languages other than English, reviews and abstracts. Although care giving of HIV-infected children may also affect their parents' and caretakers' lives, our review only intended to focus on the informal caregivers of *adults* with HIV/AIDS.

Data collection and analysis

Demographic distribution for all participants in the selected studies was summarized according to the year, country, age, gender, ethnicity, religion, period of care giving, marital status and HIV status (Table 1). Additionally, the following information was dissected i.e. study design, sampling technique, sample size and recruitment, instruments, time taken (per interview), main care giving outcomes and major findings (Table 2). All information extracted from the articles were tabulated accordingly.

Table 1. An overview of demographic indicators of caregiver respondents involved in the reviewed studies (2002-2012)

No	• Year ➤ Author(s)	Country (place)	Age (mean / range / categories)	Gender (%)	Period of care giving (mean / range / categories)	Ethnicity / Religion (%)	Marital status (%)	HIV status (%)
1.	• 2003 ➤ Kespicha-yawattana and Van Landing-ham [11]	Thailand (Chiang Mai, Phichit and Rayong)	Mothers: Mean = 60.0 Fathers: Mean = 62.0	Male and female (not specified)	N/A	N/A	N/A	N/A
2.	• 2003 ➤ Land et al [12]	USA (Los Angeles and San Francisco)	HIV-positive: Mean = 36.9 HIV-negative: Mean = 39.2	Male = 100.0	HIV-positive = 1.8 years HIV-negative = 1.7 years	White = 78.0 Black = 8.0 Latino = 8.0 Other = 6.0	N/A	HIV-positive = 39.4 HIV-negative = 60.6
3.	• 2003 ➤ Mc Causland and Paken-ham [13]	Australia (Queensland)	Mean = 43.1 Range = 19.0 – 70.0	Male = 59.4 Female = 40.6	Mean = 39.1 months	Protestant = 10.9 Roman Catholic = 15.6 Other Christian = 15.6 Nil Religion = 17.3 Other Religion = 40.6	Unmarried = 53.1 Married = 21.9 Separated = 6.3 Divorced = 15.6 Widowed = 3.1	N/A
4.	• 2003 ➤ Wight et al [14]	USA (Los Angeles and San Francisco)	Mean = 39.2	Male = 100.0	1.9 years	Non-Hispanic White= 79.0 African American= 7.0 Hispanic= 8.0 Asian= 2.0 Other= 4.0	N/A	HIV-positive = 41.3 HIV-negative = 58.7
5.	• 2004 ➤ Chimwaza and Watkins [15]	Malawi (Balaka district)	N/A	Female = 100.0	N/A	N/A	Married= 40.0 Widowed= 13.3 Single= 46.7	N/A
6.	• 2004 ➤ Katapa [16]	Tanzania (Rungwe district)	Male: Range = 35.0 to 55.0 Female: Range = 23.0 to 78.0	Male = 7.0 Female = 93.0	N/A	N/A	Married= 55.0 Widowed= 35.0 Separated= 7.0 Divorced= 1.5 Single= 1.5	N/A
7.	• 2004 ➤ Pirraglia et al [17]	USA	Mean = 42.0	Male = 47.0 Female = 53.0	N/A	White= 40.9 African American= 27.3 Other= 31.8	Partnered/marri ed= 43.2 Other= 56.8	HIV-positive = 44.3 HIV-negative = 55.7
8.	• 2004 ➤ Stetz and Brown [18]	USA	Mean = 39.0	Male = 20.0 Female = 80.0	N/A	Caucasian = 80.0 African American = 13.0 Other = 7.0	N/A	N/A

9.	• 2005 ➢ Moore and Henry [19]	Togo (Lome)	Mean = 60.0	Male = 14.0 Female = 86.0	10.2 months	Christian = 76.0 Muslim = 8.0 Indigenous = 12.0 Others = 4.0	Married = 30.0 Divorced = 8.0 Widowed = 34.0 Separated = 28.0	N/A
10.	• 2006 ➢ Demmer [20]	South Africa (KwaZulu-natal)	Mean = 35.0	Male = 22.2 Female = 77.8	N/A	Black = 90.0 Other = 10.0	N/A	N/A
11.	• 2006 ➢ Engler et al [21]	USA (Rhode Island)	Mean = 42.1	Male = 47.2 Female = 52.8	N/A	White= 40.9 Black= 27.3 Hispanic= 23.9 Other= 8.0	N/A	HIV-positive = 22.2 HIV-negative = 77.8
12.	• 2006 ➢ Mwinituo and Mill [22]	Ghana (Accra)	Range = 12.0 to 80.0	Male and female (not specified)	Mean = 2 years Range = 3 months to 5 years	N/A	Married= 54.5 Widowed= 9.1 Divorced= 9.1 Single= 27.3	N/A
13.	• 2006 ➢ Orner P. [23]	South Africa (Khayelitsha & Delft in the Western Cape)	Mean = 40.0	Male = 4.4 Female = 95.6	Categories: <2 years = 25% 2-5 years =37.5% > 5 years =37.5%	N/A	N/A	N/A
14.	• 2007 ➢ Kipp et al [24]	Uganda (Kibiito, Kahunge, Kaihura and Kataraka)	Range = 19.0 to 73.0	Male = 25.0 Female = 75.0	N/A	N/A	Married= 62.5 Widowed/ Divorced= 12.5 Single= 25.0	N/A
15.	• 2007 ➢ Miller et al [25]	USA	Mean = 41.2	Male = 47.0 Female = 53.0	N/A	White= 40.9 African American= 27.3 Other= 31.8	Partnered/Married= 43.2 Other= 56.8	HIV-positive = 44.3 HIV-negative = 55.7
16.	• 2007 ➢ Wight et al [26]	USA (Los Angeles)	Mean = 53.8	Female = 100.0	5.2 years	Non-Hispanic white= 17.0 African American= 27.4 Hispanic= 51.9 Other= 3.7	N/A	HIV-positive = 27.4 HIV-negative = 72.6
17.	• 2008 ➢ Bogart et al [27]	USA	Mean = 46.0 Range = 30.0-62.0	Male = 27.0 Female = 73.0	N/A	African American = 48.0 American Indian = 3.0 Latino = 21.0 White = 27.0	N/A	N/A
18.	• 2009 ➢ Aga et al [28]	Ethiopia (Addis Ababa)	Range = 16.0 to 76.0	Female = 100.0	N/A	Orthodox Christian= 77.8 Protestant Christian= 5.5 Muslim= 16.7	Married= 38.9 Widowed= 22.2 Divorced= 5.6 Single= 33.3	N/A

19.	• 2009 ➢ Feng et al [29]	Taiwan	Mean = 47.5	Male = 26.0 Female = 74.0	N/A	Buddhism= 44.0 Folk faith= 14.0 Christianity= 4.0 Taoism= 20.0 Other= 20.0 Nil= 2.0	Married= 64.0 Widowed= 12.0 Divorced= 6.0 Single= 14.0 Concubinage= 4.0	N/A
20.	• 2009 ➢ Mitchell and Knowlton [30]	USA (Baltimore, Maryland)	Categories: ≤45 years= 50.2% ≥45 years= 49.8%	Male = 42.5 Female = 57.5	N/A	Primarily African American	N/A	HIV-positive = 43.0 HIV-negative = 57.0
21.	• 2009 ➢ Pallangyo and Mayers [31]	Tanzania (Dar es Salaam)	Range = 33.0 to 50.0	Female = 100.0	N/A	N/A	Single= 37.5 Widowed= 25.0 Married= 37.5	HIV-positive = 50.0 HIV-negative = 50.0
22.	• 2009 ➢ Tshililo and Davhana-Maselesele [32]	South Africa (Limpopo province)	N/A	Male and female (not specified)	N/A	N/A	N/A	N/A

Table 2: Summary of studies on HIV/AIDS informal caregivers (2002 until 2012)

No	• Year ➢ Author(s)	• Study type ➢ Study design	Sampling technique	• Sample size (n) ➢ Recruitment sites / means	• Instrument(s) ➢ Administration	Time taken (per interview)	Main care giving outcome(s) examined	Major findings	Comments
1.	• 2003 ➢ Kespicha-yawattana and Van Landing-ham [11]	• Mixed-method (qualitative and quantitative) ➢ N/A	Convenience sampling	• Quantitative (n = 770) • Qualitative (n = 18) ➢ Interme-diaries (local health officials)	• Center for Epidemiologic Studies-Depression Scale (CES-D) • Global Health Assessment (GHA) ➢ In-person interviews	N/A	Effects on health	• Anxiety • Insomnia • Fatigue • Muscle strain • Head and stomach aches	• Charac-teristics of respon-dents were not clearly described.
2.	• 2003 ➢ Land et al [12]	• Quantitative ➢ Cross-sectional	Purposive sampling	• n = 416 ➢ Community-based AIDS organiza-tions (32%) ➢ Media advertising (68%)	• Stress • Role overload • Role captivity • Financial strain • Self-esteem • Hopkins Symptom Checklist-90 (depression subscale)	Approximately 1.5 hours	Stress process and predictors of depressive symptoma-tology	• HIV-positive caregivers reported high levels of depress symptoma-tology than HIV-negative caregivers. • Poor health and financial concerns were specific predictors of	• Self-reported serostatus rather than testing for confirma-tion • Focused on sexual prefe-rence (gay and bisexual)

					➢ In-person interviews			depression. • HIV-negative specific predictor associated with care giving role.	
3.	• 2003 ➢ Mc Caus-land and Paken-ham [13]	• Quantitative ➢ N/A	Purposive sampling	• n = 64 ➢ Community-based AIDS organiza-tions ➢ Media advertising	• Caregiver health status • Caregiver social support • Caregiver coping strategies • Caregiver appraisal • Caregiver and care recipient global distress • Beck Depression Inventory (BDI) • The Caregiver Reaction Assessment (CRA) • The Psychosocial Adjustment to Illness Scale-Self Report (PAIS-SR) • Care recipient health status ➢ In-person interviews	90 minutes	Benefits of care giving and relations among care giving adjustment, benefit finding, stress and coping variables	• Poorer care giving adjustment was positively correlated with care recipient distress and passive avoidant coping. • However, poorer adjustment was inversely correlated with social support and benefits.	• Assessing many variables could burden the caregivers (eight question-naires with 165 items)
4.	• 2003 ➢ Wight et al [14]	• Quantitative ➢ N/A	Convenience sampling	• n = 276 ➢ Community-based AIDS organiza-tions (32%) ➢ Mass media announce-ments (32%) ➢ Doctors' offices, clinics, health fairs, gay pride festivals and other miscella-neous sources (36%)	• Activities of daily life (ADL) • Duration of care giving • Role overload • Caregivers' perceptions of PLWHA symptoms • Financial worry • Social constriction • Emotional distress • Patients living with HIV/AIDS (PLWHA) family support ➢ In-person	Approximately two hours	Family support on AIDS caregivers' stress.	• Emotional distress among HIV-positive caregivers was associated with high care giving stress and low PLWHA family support. • Financial worry exacerbated the impact of role overload.	• Focused on sexual preference (gay) • Assessing many variables could burden the caregivers (five question-naires with 74 items)

					interviews				
5.	• 2004 ➢ Chimwaza and Watkins [15]	• Qualitative ➢ N/A	N/A	• n = 15	• None ➢ In-person interviews	Approximately one hour	Care giving experience	• Reluctance to acknow-ledge disease as AIDS • Financial burden • Physically and emotionally demanding	• Only females managed to be recruited thus, generaliza bility to other gender was limited.
6.	• 2004 ➢ Katapa [16]	• Qualitative ➢ N/A	N/A	• n = 60 ➢ N/A	• None ➢ In-person interviews ➢ Focus group discussion with 30 caregivers in each community.	N/A	Care giving experience	• Lack of household basic needs for the patients • Assets were sold in order to buy medicine for the patients. • Most worked under stress and received no support from the community (resulting in stigma to family members).	• Different groups of caregiver were involved in in-depth interviews and focus group discussion hence extensive expe-rience of care giving could be obtained.
7.	• 2004 ➢ Pirraglia et al [17]	• Quantitative ➢ Cross-sectional	N/A	• n = 176 (dyads) ➢ Brown University AIDS Programme	• Beck Depression Inventory (BDI) • Caregiver Strain Index (CSI) ➢ In-person interviews	N/A	Relation-ship between depression and caregiver burden	High caregiver burden was strongly associated with depression	• HIV patients were also involved, hence asso-ciation between caregivers' depression and well-being of HIV patient could be assessed.
8.	• 2004 ➢ Stetz and Brown [18]	• Quantitative ➢ N/A	Convenience sampling	• n = 15 ➢ Community-based AIDS agencies ➢ Mass media announce-ments ➢ Home health care agencies	• Center for Epidemiologic Studies-Depression Scale (CES-D) • Bereavement Item Scale • The Symptoms of Stress Scale (SOS) • Caregiver Reaction Assessment • Caregiving	N/A	Physical and emotional health	• High level of stress and depression • Health problems limited ability to socialize	• Age of AIDS caregivers were younger than cancer caregivers, hence compare-sons were limited by variability in sample characteris tics.

				Demands Scale • The Interpersonal Relationship Inventory (IPRI) • The Mutuality Scale • The Support Behaviors Inventory • The Short Form Health Survey • The Quality of Life Scale ➢ In-person interviews				
9.	• 2005 ➢ Moore and Henry [19]	• Mixed method (qualitative and quantitative) ➢ N/A	N/A	• n = 50 ➢ Non-government-mental organiza-tions	• Demands • Workload • Family stress • Support ➢ In-person interviews	Average of one hour	Care giving experience	Challenges identified:- • Not prepared for the demanding role of care giving. • Financial burden, frustration, despair and isolation • Depletion of resources	• Focused on older caregivers, thus findings could not be gene-ralized to young caregivers.
10.	• 2006 ➢ Demmer [20]	• Qualitative ➢ N/A	Purposive sampling	• n = 18 (caregivers who had lost loved ones to AIDS) ➢ N/A	• None ➢ In-person interviews	N/A	Care giving experience	• Stigma and denial • Lack of support	• Past expe-rience of care giving
11.	• 2006 ➢ Engler et al [21]	• Quantitative ➢ Cross-sectional	N/A	• n = 176 ➢ Brown University Medical Clinics.	• Caregiver Strain Index (CSI) • HIV coping scale • Beck Depression Inventory (BDI) • Symptom Factor-36 Scale • Caregivers' perceptions of PLWHA symptoms ➢ In-person interviews	90 minutes	Role of coping on caregiver burden	• Coping types which significantly and positively correlated with caregiver burden:- • blame-withdrawal • active-approach • distancing • Caregiver burden significantly and positively associated with stress	• Assessing many variables could burden the caregivers (five questionna ires with 62 items)

								and caring patients with poor physical functioning and low CD4 count (<200).	
12.	• 2006 ➢ Mwinituo and Mill [22]	• Qualitative ➢ N/A	Purposive sampling	• n = 11 ➢ HIV outpatient clinic	• None ➢ In-person interviews	Up to 4 hours (due to interruption by visitor)	Care giving experience	• Loss of jobs due to discrimination • Stigma in relation to:- ➢ Provision of care in secrecy ➢ Loneliness and isolation ➢ Lack of support ➢ Disrespect from health workers	• Long duration of interview could burden the caregivers
13.	• 2006 ➢ Orner P. [23]	• Qualitative ➢ N/A	Purposive and snowball sampling	• n = 45 ➢ N/A	• None ➢ In-person interviews	N/A	Psycho-social impacts on caregivers and care giving experience	Impacts of care giving:- • Insufficient support • Poverty • Lack of basic resources • Stigma and prejudice	• Two sampling techniques were employed • Thus, large respon-dents were recruited
14.	• 2007 ➢ Kipp et al [24]	• Qualitative ➢ N/A	N/A	• n = 16 ➢ Home-based care program.	• None ➢ In-person interviews	N/A	Caregiver burden and coping strategies	• Role of male family members • High burden • Coping mechanism • Lack of knowledge and skills in care provision • Lack of support	• The recruitment was gender-specific (female) • Generaliza-bility to other cohort of caregivers was limited
15.	• 2007 ➢ Miller et al [25]	• Quantitative ➢ Cross-sectional	N/A	• n = 176 (dyads) ➢ Brown University AIDS Programme	• Family Assessment Device (FAD) • Characteristics of patient/care-giver relationship • Social support	N/A	Relation-ship quality of HIV patients-caregivers	Relationship is associated with:- • Depression and burden • Patients' depression • Physical	• Assessing many variables could burden the caregivers (seven question-naires with

No.									
					• Beck Depression Inventory (BDI-I) • Medical Outcomes Study 36-Item Short-Form Health Survey (SF-36) • Caregiver Strain Index • HIV treatment adherence ➢ In-person interviews			impairment • HIV medication adherence	103 items)

16.	• 2007
	➢ Wight et al [26]
		• Quantitative
		➢ N/A
			Convenience sampling	• n = 135 (dyads)
				
				➢ AIDS organization mailings (46.7%)
				➢ Service provider referral (18.2%)
				➢ Posted flyers (16.2%)
				➢ Word-of-mouth (6.8%)
				➢ Unspecified means (12.1%).
					• Impacts of Events Scale (IES)
					• Stress variables
					  • Activities of daily living (ADL)
					  • Role overload
					  • Dyadic adjustment
					  • Perceived AIDS stigma
					  • Constriction of social activities
					  • Financial worry
					• Emotional distress
					
					➢ A structured computerized interviews
						Approxi-mately two hours.	HIV-related traumatic stress symptoms	High level of traumatic stress was associated with:-
								• Being HIV positive
								• Feeling overloaded by care giving demands
								• High levels of HIV stigma.
									• Assessing many variables could burden the caregivers (eight question-naires with 120 items)
									• Incentive was provided

17.	• 2008 ➢ Bogart et al [27]	• Qualitative ➢ N/A	N/A	• n = 33 ➢ HIV Cost and Services Utilization Study (HCSUS)	• None ➢ In-person interviews	Approximately 1.5 hours	Interconnec tedness of stigma experiences	• Different types of stigma (felt stigma and enacted stigma) experienced. • Fears due to prejudice and discrimina-tion were reported.	• Parents, children and caregivers involved interviews hence extensive expe-rience of care giving could be obtained.
18.	• 2009 ➢ Aga et al	• Qualitative-focused	Purposive sampling	• n = 18 (6 key	• None	45 to 60 minutes	Influence of socio-	Influential sociocultural	• Charac-teristics of

No.	Year/Author & Design	Design		Sample	Methods		Focus	Findings	Limitations
	[28]	ethnography ➢ N/A		participants & 12 general participants) ➢ N/A	➢ In-person interviews aided by participant observation		cultural factors in care giving	factors:- • Religious beliefs • Economic issues • Education • Social stigma and discrimination	key participants and general partici-pants were not clearly described. • The recruit-ment was not gender specific hence, only females managed to be recruited

19.	• 2009
	➢ Feng et al [29]
		• Quantitative
		➢ Cross-sectional
			N/A	• n = 50
				
				➢ Medical centre
					• Family Stress Scale
					• Family Needs Scale
					• Sources of Family Needs
					• Quality of Life (QoL) Assessment
					
					➢ In-person interviews
						N/A	Stress, needs and quality of life (QoL)	• Disclosure and stigma
								• Patients' interper-sonal relation-ship.
								• Care-related needs:
								  • Know-ledge of disease progression
								  • methods of exami-nation
								  • treat-ment and the related side effects
								• Stress was significantly and positively correlated with needs and negatively correlated with QoL
								• Interper-sonal relationship with PLWHA improved (after knowing about HIV infection
									• Assessing many variables could burden the caregivers (four questionna-ires with 99 items)

								and caring for PLWHA)	
20.	• 2009 ➢ Mitchell and Knowlton [30]	• Quantitative ➢ Cross-sectional	N/A	• n = 207 ➢ N/A	• Community Epidemiology Study-Depression (CES-D) • Stigma Scale • Disclosure Scale • Physical functioning • Caregiver burden ➢ In-person interviews using a computer-assisted personal interviewing approach (CAPI)	Approximately 1 hour and 15 minutes	Stigma, disclosure and depressive symptoms among informal caregivers	• Stigma was associated with more depressive symptoms • Significant decrease in depressive symptoms with increasing number of disclosure	• This study was conducted in areas with high preva-lence of drug use thus, generaliza bility limited to urban African American.
21.	• 2009 ➢ Pallangyo and Mayers [31]	• Qualitative, descriptive and exploratory (based on interpretive paradigm) ➢ N/A	Purposive sampling	• n = 8 ➢ Pastoral Activities and Services for People with AIDS (PASADA)	• None ➢ In-person interviews	Approximately 45 to 60 minutes	Care giving experience	• Financial constraints impacted upon the costs of caring. • Stigma and discrimi-nation • Stress (patient-related, emotional and physical exhaustion) • Care burden and challenges (multiple roles, caregiver's health, lack of education and unemployme nt) • Limited support	• The recruitmen t was gender specific (female) • Generaliza bility to other cohort of caregivers was limited
22.	• 2009 ➢ Tshililo and Davhana-Masele-sele [32]	• Qualitative, phenome-nological, explorative, descriptive and contextual	Purposive sampling	• n = 12 ➢ N/A	• None ➢ In-person interviews	N/A	Care giving experience	Experience of negative feelings (in extreme poverty) • Sadness • Pain	• Demo-graphic distribu-tions were not clearly explained, making study generaliza

		➢ N/A						• Anger	bility to those with different demo-graphic charac-teristics difficult.
								• Depression	
								• Frustration	

Results

From the year 2002 until 2012, a total of 22 studies involving care giving HIV/AIDS were found. Among these, eight were published in AIDS Care, two were published in AIDS and Behavior and the rest were traced from various journals such as the International Journal of STD & AIDS, AIDS Patient Care and STDs, Journal of the Association of Nurses in AIDS Care, Ageing International, Journal of General Internal Medicine, Journal of Loss and Trauma, Psychosomatic Medicine, Nursing and Health Sciences, Health Care for Women International, Public Health Nursing, Journal of Nursing Scholarship and Western Journal of Nursing Research (one article each).

Most of the published articles were originated from studies conducted in the African continent (n=10) and the United States of America (n=9). The former were carried out particularly in South Africa (n=3), Tanzania (n=2), Malawi (n=2), Ghana (n=1), Uganda (n=1), Ethiopia (n=1), and Togo (n=1). On the other hand, only three trials were carried out in the Asian and Oceanian regions involving Taiwan, Thailand and Australia.

Demographic characteristics of HIV/AIDS informal caregivers

The total number of participants enrolled in all the included trials from the year 2002 until 2012 is 2,765. The majority of informal caregivers included in this review ranged from 18-50 years old. Only one study focused on older informal caregivers (mean age = 60 years) [17] while two studies reported that the youngest carer was as young as 12 years old [14,21].

In studies not focusing on any specific gender of informal caregivers, females appeared to be the predominant gender, whereby its percentage was higher (range = 40.6% to 95.6%) compared to males (range = 4.4% to 47.2%). The two trials focusing on female as informal caregivers were carried out in United States of America and Tanzania. Interestingly, the two studies conducted in Los Angeles and San Francisco, USA had involved male (gay and bisexual) informal caregivers. Nevertheless, distribution of the caregivers' gender was not documented in three reviewed articles [21,31]. Based on the caregivers' ethnicity in our findings, they were largely represented by the main ethnic group, dominated by whites in studies that were carried out in USA although the majority of PLWHA in the USA were primarily African Americans [33]. Nonetheless, ethnicity was not specifically reported in three out of the 22 trials which merely stated that most of the respondents were Christians. Besides, seven studies neither reported the ethnicity nor religion of the respondents. On the other hand, marital status of informal caregivers was only reported in ten studies of which majority were already married (21.9% - 64.0%).

Additionally, only eight studies including information on the HIV status of the corresponding informal caregivers whereby HIV-negative caregivers (77.8%) have clearly outnumbered their HIV-positive counterparts (50.0%). The period of care giving was mentioned in six studies whereby many have become carers for more than 12 months. Only one study reported that the average duration of care giving was less than 12 months.

Definition of caregivers

Many of the reviewed articles did not provide a clear definition for "caregiver". Only one study clearly stated the definition and the characteristics of a caregiver, in which defined

as "primary caregivers who provide ongoing practical assistance with activities of daily living to a friend, partner, or family member" [12]. Informal caregivers in this study were those providing unpaid care, thus excluding trained volunteers or paid home professionals. Nonetheless, some studies only stated their required characteristics of caregivers as part of the inclusion criteria whereas one study did not include caregivers who were blood relatives of the patients.

Care giving experiences and challenges

Eight out of the 22 articles (36.4%) focused mainly on the care giving experiences as well as the challenges faced by informal caregivers. Financial burden and worries were highlighted in eight articles and care giving was reported to be influenced by role overload. This seemed to impose burden on caregivers and could be worsen by the additional responsibilities of caring for household matters.

Issues related to stress and depression were elaborated by thirteen articles (61.9%). Seropositive caregivers reported the significantly higher levels of stress due to financial concerns and low self-esteem traits as they were younger, less educated, earned less income and were less likely to be employed [12,14]. Additionally, stress was significantly associated with feeling overloaded by care giving demands [26] especially with regard to caring for PLWHA with a CD4 count of less than 200 and having poorer physical functioning [21]. In addition, stigma significantly exacerbated the stress levels of caregivers [23,26,29]. Together, stigma and discrimination were linked to the incidence of fear and anxiety among other family members [32]. Besides that, the level of stress was also significantly and positively correlated with needs i.e. knowledge of the disease progression, methods of examination, treatment and the related side effects [29].

Pirraglia et al [17] further reported that the burden of care giving, medical comorbidities (other than HIV), illicit drug uses, other caring

responsibilities (other than HIV patients), spending all day together and the duration of HIV diagnosis were strongly associated with depression. Moreover, a qualitative study showed that emotional demands impacted negatively on caregivers' mental health. Poverty, poor infrastructure, lack of affordable public transport and difficulties in accessing care were all contributory to their stress [30]. In cases of extreme poverty, other family members similarly experienced negative feelings characterized by sadness, pain, anger, depression and frustration [32].

In another qualitative study conducted by Pallangyo and Mayers [31], long term caring, stigma and discrimination and dealing with unresolved and recurring problems have led to a sense of helplessness, tearfulness, somatisation and discouragement. It was also reported that due to their role as caregivers, some respondents have even withdrawn from the society's circle, thus resulting in loneliness and isolation [18,22]. In a study conducted in Thailand, more than half of all AIDS-affected household fathers and mothers experienced anxiety and insomnia during the time of caring for their child with AIDS and this percentage has risen to beyond 70% for mothers and fathers who were primary caregivers [11].

Family support and relationship quality between caregiver and patient were further discussed in two articles. Apart from that, lack of support from extended families, the government and NGOs was reported to worsen current distressing problems in six studies. Besides that, only one article focused on the role of coping with care giving burden. Blame-withdrawal, active approach and distancing were the three types of coping strategies which were significantly and positively correlated with care giving burden [20].

Methodology of studies

Only from seven studies the information regarding methodological issues managed to be extracted. Based on the types of study, both qualitative (n=11) and quantitative (n=9) were

the equally preferred types while mixed-method (quantitative and qualitative) was only employed in two trials. In-person interviews with broad, open-ended questions and additional probe were utilized in order to draw further information about the issues in most qualitative studies. In contrast, structured questionnaires administered through trained personal interviewers were employed as the main data collection method in quantitative studies. Additionally, structured questionnaires were used in combination with interviews with the key informants in mixed-method (n=2).

The sample size of respondents varied widely in each study, ranging from 8 to 770. Most of the qualitative studies had included relatively small samples (8 to 45 respondents) while the quantitative studies enrolled over 100 respondents each, with the highest number being 770. Only one quantitative study consisted of only 50 respondents. None of the studies reviewed was carried out as randomized controlled trials (RCT). Nevertheless, six studies employed a cross-sectional design while purposive sampling emerged as the most preferred sampling technique. A variety of respondent recruitment methods have also been employed. Firstly, respondents were enrolled with the help of non-governmental organizations (NGOs) while a second approach utilized the mass media advertisements. The third method gathered respondents with the cooperation of healthcare institutions, although some trials used a combination of the methods mentioned earlier.

Various kinds of instrument were used in the quantitative studies. Questionnaires assessing depression was found to be the most popular, whereby the Beck Depression Inventory (BDI) and the Caregiver Strain Index (CSI) appeared as the most frequently utilized instruments for the respective study purposes.

Additionally, the time taken for interviews was also reported in eleven studies which took between 45 minutes to two hours. Unfortunately, due to the interruption from visitors, one study reported that the time taken for a session was nearly four hours.

Discussion

This brief review intended to provide a structured analysis of published articles over the past 10 years in the area of care giving for HIV/AIDS sufferers. Among others, the experiences and challenges of care giving, methodological issues, suggestions for future investigations as well as the limitations involved are importantly highlighted.

According to the overall assessment, more than 90% of the studies were carried out in the African continent and the United States of America. This clearly demonstrated that studies of such nature are still inadequate in the European and Asian countries although it was estimated that in 2010, 2.3 million and 4.3 million people were living with HIV in the respective continents [1]. In addition, although the national HIV prevalence in most Asian countries is relatively low (e.g. India = 0.3%), the population density of some countries is so vast that these low percentages had actually represent a very large numbers of people with HIV infection. Hence, more research on care giving should be conducted in this less-studied region to examine geographical, cultural and social differences which may affect care giving outcomes in various cohort of patients.

Irrespective of any specific gender, female caregivers were reported to spend more time on care giving responsibilities than their male counterparts in this review. This nurturing and caring role was traditionally and culturally regarded as women's responsibilities for their spouses and children [34]. Not surprisingly, studies on family care giving have also generally been focused on female family caregivers in other HIV/AIDS-related studies [9,35].
A variety of age categories was involved in our analysed studies. Young caregivers were usually reported to be responsible for domestic work (e.g. cooking, fetching water and wood) because they live in the same house with the sick parents or siblings [36]. Unfortunately, due to the impact of caring responsibilities, their school attendance became irregular or they could even completely dropout in the end [37]. On the other hand, older

caregivers were reported feeling overwhelmed by the magnitude and multiplicity of tasks they had to perform [38]. This demanding task was reported to negatively affect them in various life aspects such as economic, emotional, physical, and nutritional issues, which impacted upon their health and well-being [39]. As a result, caregivers' role in these two differing cohorts should be acknowledged and constantly supported considering that they were very much lacking in basic care giving education coupled with inadequate resources in home care [38].

The current studies in our review appeared to look specifically at the negative mental outcomes of HIV/AIDS care giving such as stress and depression with very little emphasis on the positive outcomes of PLWHA care giving. This was in concordance with other reviewed studies in mental illness and HIV/AIDS which also examined negative outcomes [5,40]. Thus, future studies are needed to explore both the negative as well as the positive aspects of care giving for PLWHAs.

A huge proportion of caregivers of PLWHA was clearly affected by symptoms of depression. The analysed studies showed that care giving burden was strongly associated with depression in particular [17,21,25]. This was not unexpected as depression was also highly prevalent among family caregivers of other chronic diseases such as cancer and schizophrenia. For example, it was reported that care giving burden was positively linked to depressive symptoms in Chinese caregivers of cancer patients [41] while caregivers of schizophrenia patients were also reported of worse emotional functioning in comparison to other aspects [42]. Thus, healthcare personnel in contact with caregivers should consider screening these individuals too for possible mental disorders and attempt to recommend further evaluation by the physicians if necessary.

It was particularly noted that seropositive women caregivers experienced greater burden of care giving-related stress which could be due to them being the more likely primary household providers who also cared for their children [43].

On top of that, these women were confronted with the challenge of being both a patient as well as a family caregiver in the course of their illness. In the United States, a study conducted qualitatively exploring this dual-challenge showed that all women exhibited evidence of clinical depression [44]. However, in caregivers who were self-identified as gay, depression is a function of social constriction and AIDS-related bereavement [45]. This meant that they usually isolate themselves from their extended family and communities to protect themselves as well as their care recipient from maltreatment. Consequently, some caregivers reported that they did not receive any valuable supports from their family members as well as from the community [46].

In addition to problems with depression, the most prevalent factor causing stress among caregivers were stigma and discrimination due to disclosure of the disease [47]. Caregivers were reported loss of jobs and employment opportunities as well as lack of respect from health workers because of these issues [48]. As a result, the care giving process was carried out in absolute secrecy [49]. Race also played an important role in HIV-related stigma. In a study conducted in South Africa, blacks were more likely to report experiencing stigma in their families compared to non-blacks counterparts [50]. Physical stigma (isolation from family members), social stigma and verbal stigma were the types of secondary stigma commonly experienced by the caregivers [51]. Additionally, living in excruciating economic burden might have also imposed a tremendous psychological pressure due to societal discrimination and isolation [52]. Attempts should hence be made by the relevant authorities to minimise these misfortunes in families with HIV/AIDS problems.

In the context of rapid demographic and socioeconomic change, the impact of care giving for rural and urban caregivers may also be different. In these analysed articles, depression and caregiver's burden were the main issues addressed in urban areas such as San Francisco and Los Angeles which further identified role overload and employment status as the strongest

predictor of depression in HIV-seropositive male partners [45]. In contrast, poverty, stigma and discrimination were the main problems faced by caregivers in sub Saharan Africa which were significant among caregivers in the rural areas [53]. This trend might be due to the limited access to outreach programmes and community health services [54]. Therefore, better understanding of rural-urban differences in care giving outcomes could be beneficial in designing supportive services for informal caregivers.

Despite the challenges and negative experiences reported by informal caregivers, none of the trials provided interventions aimed at reducing their psychosocial burden. Educational interventions that aimed at reducing stigmatization are hence valuable and should be disseminated. Essentially, the programme needs to provide accurate knowledge and correct the inaccurate beliefs towards HIV/AIDS on a continuous basis [55]. A study conducted among children living in communities with high HIV prevalence in rural China has proven that children with better AIDS knowledge possessed less personal stigma towards PLWHA [56]. This encouragingly showed that sound knowledge of HIV maybe influential in changing the people's behaviour and attitudes towards this fatal and infectious disease.

Throughout the investigations, both qualitative and quantitative approaches were widely employed in exploring care giving experiences and challenges, despite the mixed method representing the more comprehensive technique in HIV/AIDS research. The latter served a dual purpose of gaining focused, measurable and comparative data from larger samples as well as obtaining more in-depth information of the related issues from smaller cohorts such as commonly seen in this type of research [57]. Thus, it is reasonable that the mixed method approach should be more frequently adopted in future investigations, in order to enhance understanding of care giving in HIV/AIDS research.

Selection bias also appeared to be very common across all the reviewed studies. Most respondents were self-enrolled through numerous channels (e.g., community services, media announcements, gay festivals), hence possibly leading to over-representation of a particular group of informal caregivers, such as gay male partners and older caregivers. Additionally, there were also studies which focused on a specific gender, whereby as a result of this, the generalizability of the outcomes became rather limited.

Limitations

There are inevitably several drawbacks in this review. Our limited access to online databases which stored predominantly English-language literature, may have indirectly neglected the non-English articles. The latter may importantly contain information which could complement the existing research findings. Besides, this review only covered articles from four electronic databases namely Science Direct, EBSCOhost, Ovid and Springer Link, hence limiting the scope of search, let alone the limitation using the manual method. As highlighted earlier, since the majority of trials have been conducted in Africa and the USA, our findings may not be generalizable to HIV caregivers in other regions. Consequently, additional investigations should be initiated within more diversified groups of respondents for a more comprehensive coverage.

Conclusion

In conclusion, majority of the studies were carried out in the African region and the United States of America with a wide range of age categories was reported to be involved in care giving. In studies not focusing on a specific gender, females appeared to be dominant. Stress and depression, stigma and discrimination, insufficient support, role overload and extreme poverty were the main challenges reported. Therefore, the integration of medical, psychological and social services by both primary clinicians and community-based outreach staff would be beneficial for caregivers.

At its most expansive, multidisciplinary cooperation from psychologist, psychiatrist, social worker, medical specialist and pharmacist are deemed necessary and effective in addressing the above issues. Both qualitative and quantitative were the equally preferred types of study while numerous life aspects were negatively affected by care giving for HIV/AIDS patients. Consequently, future research should not only investigate the impact of care giving in other regions but also attempt to develop and test effective interventions (e.g. educational programme, support group) which could assist in improving the caregivers' HRQoL in order to provide optimal quality in care giving.

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CASE REPORT

FOLIE A DEUX COMPLICATE MANAGEMENT OF A CHILDHOOD ONSET SCHIZOPHRENIA

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Abstract

Objective: **This case report highlights folie a duex of a caregiver that complicate the management of a case of childhood onset schizophrenia.** *Methods:* **We report a case of a young Malay girl with symptoms of schizophrenia and her caregiver who share her delusion.** *Result:* **Folie a duex in the caregiver caused difficulty in the initiation and maintenance of treatment of a child with schizophrenia.** *Conclusion:* **Treating children with schizophrenia is not easy and could be complicated by the folie a duex in caregiver. Although Child Act 2001 can be applied in order to deliver appropriate treatment to this group of patients, one must be cautious about the implication in therapeutic alliance.** *ASEAN Journal of Psychiatry, Vol. 13 (2): July – December 2012: 218-220.*

Keywords: Folie A Duex, Childhood Onset Schizophrenia, Child Act 2001

Introduction

Childhood onset schizophrenia is always a challenging case for psychiatry team. Apart from the concern about the short and long term side effects of medication on a young individual, the treating team needs extra skills to deal and convince caregivers about the medication . This issue is further complicated when the main caregiver has no insight about the disorder, or even shares the delusion of the index patient as illustrated in this case report. Hence, the issue of involuntary treatment and custody of the child inevitably becomes the concern of many clinicians (1).

Case Report

An unfortunate 12 year-old girl, Miss AHL, was brought by her aunt to the psychiatric clinic of

Hospital Universiti Sains Malaysia with the complaint of school refusal for about one and a half year. Her aunt is her main caregiver since AHL's mother had chronic psychotic illness and her father went missing after divorce.

On exploration, the main reason for the school refusal was due to her psychotic symptoms. Since 2 years ago, Miss AHL believed that she is a boy and not a girl. She calls herself Adam (a boy's name). She described herself as a boy who is handicapped, limp and lisp. One of the reasons that she refused schooling was because she was not allowed to wear boy's uniform. She felt very disgusted as she has to wear skirt to school. She developed such belief since she saw a white shadow, which she believed is the prophet's helper. The white shadow told her that she was actually a boy but the devils had hidden her penis. She was very sure that she will not

have menses as she was told by the white shadow. Her delusion strengthened after her visit to a family medicine clinic during an episode of abdominal discomfort. After informing the medical officer that she is a boy rather than a girl, the medical officer was curious and performed an ultrasound scan to look for the uterus. Furthermore, the medical officer also suggested the family member to do karyotyping for her to determine the sex chromosome. The uncertainty of medical officer regarding her gender status further reinforced her delusional belief. She also believed that there were millions of invisible spirits which occupied each and every part of her body. She claimed that the spirits entered her body since she was 6 years old. All the spirits have names but she mentioned only a few prominent one, which were Khidri, Khuwairi, Manja, Jelita and Comel. The first two spirits were boys and another three spirits were girls. They helped her to walk, run and talk fluently. She was very happy with the presence of the spirits. When she became Adam, she was lisping but when she assumed the role of Khidri, she spoke fluently. Sometimes, the spirits took turns to talk, so her voice and the way she talked changes depending on which spirit was talking. In addition, the ghosts frequently threatened to harm her should she go to school. This is the second reason why she failed to attend school. She was diagnosed as schizophrenia in view of the bizarre delusions.

Her aunt, who was the main caregiver, began sharing the similar beliefs not long after AHL revealed it to her. Not surprisingly, the aunt did not accept any medical explanation about the problems. The aunt insisted that patient was actually a boy and given special ability to see and talk to spirits. She had requested a letter from doctor to certify that AHL is actually a boy, in order to change the patient's name to a boy's name when applying for the identity card in future. She even approached the school headmaster and requested for AHL to wear boy's uniform at school.

The aunt initially refused treatment for the child. However, she changed her mind after she was given the explanation on the legal implications in accordance with the Child Act 2001. This case was referred to the social worker for social workup. The child psychiatry community team also took an active role in visiting the family. Until day of writing, AHL's aunt seems to agree with the treatment plan and attend the psychiatric clinic appointment as scheduled. Should there be no improvement after optimizing medication with adequate duration, in-patient treatment might be necessary.

Discussion

This case illustrated a condition whereby a child with a florid psychotic symptom, and a systematized delusion had influenced her caregiver. The similar delusion was strongly held by her caregiver (folie a deux), who is in a close relationship with the patient. The aunt has fulfilled the DSM-IV-TR criteria for Shared Psychotic Disorder(2). This fact has unveiled the difficulty in term of management. As the aunt is the only legal guardian available for AHL, her collaboration is of paramount importance in the treatment of AHL. Unfortunately, though seemingly agreed on the treatment, the aunt might not actually serve the medication at home in view of her shared delusion. Moreover, physical separation, which has been showed to be an effective treatment for shared psychotic disorder (3,4), is virtually infeasible given the similar delusions held by the aunt. To make the matter worse, the validity of the consent for treatment for the minor, given by the sole caregiver in this case, is also not without controversy. The presence of full mental capacity of the aunt in giving a valid informed consent is particularly difficult here. Guidelines for good practice on consent illustrated that if a parent is not competent in giving consent, local welfare authority should be consulted (5) . In adherence to Malaysian law, we might consider using the Child Act 2001, Part V (Sec 17): *Children In Need Of Care and Protection*, to get her into proper treatment if the caregiver refuse treatment and show evidence of risk of emotionally injured (6). However, this measure should be considered as the last resort since to maintain bilateral therapeutic alliance is a key factor in long term successful management. Multidisciplinary approach is extremely vital in dealing with this situation.

Another interesting point in terms of management that should be highlighted is the role of inducer and induced. Generally speaking, in a classical case of folie a deux, there is only one person who has genuine psychotic disorder (with florid bizarre delusions as showed in AHL), who is supposed to induce similar symptomatology in another person who shall remain a very close relationship with the primary inducer (1). Though it is more common that the primary inducer is dominant while the induced is usually independent and submissive(7), the opposite is true in this case. However, it is sometimes difficult to differentiate the primary inducer and secondary induced (3), nonetheless effort should be made to distinguish this as it implicates in the management plan.

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CASE REPORT

KORO-LIKE SYMPTOMS WITH ASSOCIATED ERECTILE DYSFUNCTION IN A ROHINGYA REFUGEE

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Abstract

This case report highlights Koro-like symptoms with erectile dysfunction. *Methods:* We report a case of a Rohingya refugee who presented with Koro-like symptoms associated with erectile dysfunction and severe religious guilt. *Results:* Sexual dysfunction, i.e. erectile dysfunction may be a predisposing factor for a Koro incidence. Religious issues complicated by superstitious beliefs pose a treatment challenge. *Conclusion*: Treating patient with sexual dysfunction should involve exploring and addressing patient's conflicts to avoid worsening of symptoms. As this case illustrates, severe anxiety can present with Koro-like symptoms. *ASEAN Journal of Psychiatry, Vol. 13 (2): July – December 2012: 221-223.*

Keywords: Koro, Erectile Dysfunction, Anxiety, Depression

Introduction

Koro has its origin from the Malay-Indonesian word "kura" which relates to the head of tortoise, symbolizing the male sexual organ. It is a disorder with different names in different localities [1] but the essence of it is the belief of genital shrinkage into the abdomen and death will ensue. The first koro-like description is found in ancient Chinese medical records and the first koro epidemic reported was in Southern China in 1865. Although koro is described as a culture bound syndrome, reported cases of genital shrinkage has been worldwide. There have been sporadic cases of koro in Western, Middle Eastern and African countries. The similarities that can be seen among the cases are the strong association of the symptoms and severe anxiety or fear. There are only a few reported cases of koro in relation to infertility or urogenital pathology [2,3]. Our case adds to this number and highlights the association of koro-like symptoms and erectile dysfunction with severe religious guilt.

Case Report

Mr. S is a 37 years old single Muslim Rohingya man who fled Myanmar in 1996 and now is a UNHCR refugee in Malaysia. He was diagnosed with Major Depressive Disorder with psychotic and anxiety symptoms secondary to erectile dysfunction a year ago. His erectile dysfunction began 2 years ago when he was not sexually aroused during foreplay with his girlfriend. The traditional healers told him it was a consequence of his sinful act of having premarital sex and that the spirit of his girlfriend had resided in his body. He was convinced this was a punishment and also a test from God. He believed that if he commits the sin again, disaster will happen and he will be totally impotent. He developed depressive symptoms, which later improved with medication given.

He did not continue with follow ups as he felt well. During that time, he visited a prostitute to test his sexual ability and was able to have sexual intercourse. After 8 months without

treatment, he came back to our clinic complaining of erectile dysfunction and depressive symptoms. He had partially started on his antidepressant when he was presented with the koro-like symptoms. He experienced a sudden onset of burning sensation on his penis and felt as if his penis was shrinking and retracting into his abdomen. He believed that the spirit of his girlfriend in his body was pulling his genital into the abdomen. This was associated with dizziness, feeling of burning sensation in his chest and difficulty in breathing. He believed that he had to drink a lot of water in a short time to relieve the burning sensation on his chest or he will die. The incident occurred for about 1 to 2 minutes. He drank enough water which finally alleviated the symptoms but he became very distressed about the incident. No physical measures were used to prevent retraction of penis into the abdomen. He described it as a near death experience.

He came from a poor socioeconomic background of paddy planters. His father remarried after his mother passed away. He was physically abused by his father during his adolescence, which made him escaped to Thailand and later to Malaysia. His family members are in Myanmar and he had minimal contact with them. In Malaysia, he is working at a furniture shop and renting a house with 4 other people of different nationality (Indonesian, Bangladeshi and Pakistani).

Mental status examination revealed him as a very anxious and distressed person who was crying throughout the initial interview. He had overvalued ideas regarding the etiology of his illness. He believed he was being punished for his sins. He had no psychotic features. Physical examination was normal and laboratory investigations revealed only slightly elevated triglycerides. He also described some urinary symptoms but it was not persistent and investigations revealed no abnormality. He was treated with antidepressant and benzodiazepine. The depressive symptoms and sexual function had slightly improved. He became more adhering to his religious practices. However, he still complained of occasional burning sensation on his penis when feeling anxious, which made

him to believe that the above incident of penile retraction could recur.

Discussion

There are a number of factors contributing to erectile dysfunction or poor arousal. However, this patient attributed it to God's punishment to him for having premarital sexual relationship. This belief was further reinforced by the traditional healers whom he met. The psychological stress and religious guilt due to the belief could have contributed to the development of depression and further worsened his erectile dysfunction. The patient's sexual function seemed to improve with treatment of depression. However, as he defaulted his medication, the strong anxiety symptoms with regards to religious guilt for his premarital sexual act seemed to trigger the occurrence of the koro-like symptoms. The association of koro-like symptoms and anxiety has long been reported in previous papers [4,5]. There was also question as to whether koro-like symptom is just one of the many manifestations of anxiety. In psychodynamic term, koro could also be explained as a result of a person's subconscious wish [6] or an emotional expression in bodily forms [7]. In this patient, the anxiety is about finally losing his genitals which would mean that he would lose his manhood.

The term culture bound may not be accurate for this genital shrinkage phenomenon. As this case illustrates, the patient had migrated from his country and had no prior knowledge of this syndrome. Interestingly, Garlipp (2008) reported more than a fifth of cases (1954-2006) come from patients who have migration background, as a result of poor socioeconomic status and acculturation stress [8]. Coming from a poor education background, these people are prone to superstitions and they have a high regard for the traditional healers cum religious man in their area. In 2010, there was a Koro epidemic in West Bengal in India and it was perceived as a miraculous phenomenon from God because of their wrongdoings. They preferred to seek the advice and treatment of these traditional healers [9].

Treatment for Koro is mainly targeting at the underlying psychiatric disease by pharmacological and also psychotherapeutic approach with variable results [8]. Our patient showed some improvement with treatment. However, addressing the religious issue and superstitious belief which was grounded in this patient was a challenge. Exploring patient's conflicts (sexual or religious) when they are present with erectile dysfunction could be beneficial in improving the symptoms and preventing worsening of the condition. Doctors especially psychiatrists need to be well versed with the diversity in religions and cultures to be able to address issues surrounding this area.

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BRIEF REPORT

ADVANCING CHILD & ADOLESCENT PSYCHIATRY AND MENTAL HEALTH THROUGHOUT THE WORLD

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Report

Earlier this year, the World Psychiatry Association, Child and Adolescent Psychiatry (WPA CAP) section launched its Newsletter. This Newsletter is one of the new WPA CAP Executive Board's initiatives.

It is my great pleasure to welcome the members of the extensive Editorial Board: Prof. Bennett Leventhal (Chair, WPA CAP, USA), Dr. Gordana Milavic (Co- Chair, WPA CAP, UK), Prof. Dimitris Anagnostopoulos (Past Chair, WPA CAP, Greece), Prof. A.Guerrero (Assistant Editor, USA), Dr. J.Abdulmalik (Assistant Editor, Nigeria), Prof. S.Malhotra (India), Prof. D.Fung (Singapore), Prof. S.Honjo (Japan), Prof. P.Szatmari (Canada), Prof. L.Viola (Uruguay), Prof. S.C.Cho (S.Korea), Prof. D.Puras (Lithuania), Dr. V.Storm (Australia), Dr. J.Fayyad (Lebanon), Assoc. Prof. SMK.Tan (Malaysia), Dr. M.B.Moyano (Argentina), Dr. N.V.Tuan (Vietnam), and Dr. T.Masaru (Japan).

The Newsletter will have four main sections. The first section will be dedicated to official WPA CAP communications. The second section will feature upcoming academic and practical events sponsored by WPA CAP. The third section will contain reports from past events. The Newsletter will also publish brief interviews with prominent or promising colleagues, whose experience, vision, thoughts and ideas might be interesting and useful to our members. This first Issue begins with the interview with Prof. Bennett Leventhal (Chair, WPA CAP). While Professor B. Leventhal is very well known to AACAP (American Academy of Child and Adolescent

Psychiatrists) members and colleagues who attend AACAP Annual meetings, this Issue gives an opportunity for all WPA CAP members to learn a little bit more about the new Chair and his vision for WPA CAP.

As the 20th World IACAPAP Congress will be held from July 21st to 25th 2012 in Paris, France, WPA CAP is planning an active presence there. WPA CAP will organize three symposiums on 1) ADHD, (Chair: Prof. Bennett Leventhal,) 2) Tics (Chair; Prof. Barbara Coffey) and 3) Global perspectives on teaching and learning in CAP (organized by WPA CAP Group on Teaching and Learning, Chair :Dr. Norbert Skokauskas). A brief overview of WPA CAP symposiums can be found in the Newsletter. WPA CAP sponsored conferences will also be held in Belgrade, Serbia in the coming months, and Dr. Gordana Milovic reports on planned WPA CAP activities there.

This issue also features some past events sponsored by WPA CAP. Prof. B. Leventhal shares his impressions about the WPA Thematic Conference "Mental Health and Family Medicine working Together" that took place Granada, Spain. And finally this issue contains some information about upcoming events.

This is the very first issue and further suggestions and contributions from members are most welcome and we would certainly try our best to make this Newsletter the way you like. The newsletter can be downloaded at http://www.wpanet.org/detail.php?section_id=11 &content_id=450.

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EDUCATION SECTION

MOCK MODEL ANSWER FOR CRITICAL REVIEW PAPER: CONJOINT EXAMINATION FOR MASTER OF MEDICINE (PSYCHIATRY) AND MPM, NOVEMBER 2011

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Abstract

Objective: **This paper aims to highlights the answer for Review Paper Mock Exam for the Malaysian Master of Medicine (Psychiatry) theory examination. The paper compared the risk of sexual dysfunction associated with the use of two antidepressants in patients attending a university hospital.** *Methods:* **One of the papers presented during the journal club presentation was picked-up for evaluation of student's critical appraisal.** *Results***: Model answer was given at the end of the Mock Critical Review Paper.** *Conclusion:* **This review paper is an important method of evaluating the student's understanding and critical thinking on the topic of risk of sexual dysfunction associated with escitalopram and fluoxetine in female patients. This paper may serve as a guideline for nurturing young talents at the postgraduate level to critically appraise topic related to Psychiatry and sexuality.** *ASEAN Journal of Psychiatry, Vol. 13 (2): July – December 2012: 225-230.*

TITLE OF PAPER: FEMALE SEXUAL DYSFUNCTION IN PATIENTS TREATED WITH ANTIDEPRESSANT – COMPARISON BETWEEN ESCITALOPRAM AND FLUOXETINE (Published in the International Journal of Clinical Practice in Psychiatry, 2012: 41 – 47)

Objective

Escitalopram and fluoxetine are the two most commonly prescribed antidepressants in our local setting. As a result, this study aims to compare the risk of sexual dysfunction associated with escitalopram and fluoxetine in female patients from a university hospital setting.

Methods

This is a cross-sectional study to assess and compare the prevalence of female sexual dysfunction associated with fluoxetine and escitalopram. Data was collected over a period of six months, from 1st June 2009 until 30th November 2009. The study subjects were female patients on fluoxetine and escitalopram who fulfilled the inclusion criteria and attended the Psychiatric Clinic UKMMC during the study period. **Inclusion criteria** include: (i) female outpatients who were diagnosed with major depressive disorder (MDD) based on DSM-IV by the treating Psychiatrists in UKMMC using Structured Clinical Interview for DSM-IV Disorders (SCID); (ii) patients who were in full remission (defined by DSM-IV as during the past 2 months had no significant signs or symptoms of the disturbance and Montgomery-Asberg depression rating scale (MADRS) score of = 10), (iii) patients aged between 18 and 65

years old; (iv) patients who were married and with a sexually active partner, (v) Patients who were able to read and understand Malay Language (the national language); (vi) patients who consented. **Exclusion criteria** include**:** (i) patients who were suffering from chronic and severe medical illness (based on history taking and physical examination); (ii) patients who were pregnant or within 2 months postpartum period. The estimated prevalence of sexual dysfunction associated with escitalopram was 30% (Clayton and Montejo, 2006) and fluoxetine was 57.7% (Montejo et al., 2001). A total sample of 112 subjects with 56 per group will give the power of 80% with the precision of 5% for the study.

Subjects of this study were identified from the psychiatric outpatient clinic, UKMMC. Written consent was obtained. Subjects were then interviewed by using the Structured Clinical Interview for DSM-IV Disorders (SCID) Interview and the depressive symptoms were assessed with MADRS and sexual dysfunction with the Malay Version of the Female Sexual Function Index (MVFSFI). The basic socio-demographic data of the subjects was collected using a predesigned questionnaire.

Open-ended questions encourage subjects to expand their answers. Both required and optional probes are provided, and allowing the interviewer to skip unnecessary questions and moves on the next session and module. Therefore interview time can be shortened and quickened.

Montgomery-Asberg Depression Rating Scale (MADRS) was used. The original author found that a cutoff of = 10 maximized the level of agreement with the Hamilton rating scale for depression (HRSD) definition of remission (Montgomery and Asberg, 1979; Zimmerman et al., 2004). Malay Version of the Female Sexual Function Index (MVFSI) (Hatta Sidi et al., 2007) was used to assess female sexual function. MVFSFI is a validated and locally accepted questionnaire for use in the assessment of female sexual dysfunction in the Malaysian population. A total score of 55 was taken as the cut-off point for the MVFSFI to distinguish between women with and without sexual dysfunction (sensitivity = 99%, specificity = 97%). Previously published dosing classification as described by Gartlehner et al. (2007) was used in this study. This classification is used to detect inequalities in dosing, and does not indicate dosing equivalence (Cipriani et al., 2009).

Dosing classification

	Low	Medium	High
Fluoxetine	< 30 mg/day	30-50 mg/day	> 50 mg/day
Escitalopram	< 15 mg/day	15-25 mg/day	> 25 mg/day

The data collected was analyzed using the Statistical Package for Social Science (SPSS) version 12 (Chicago, IL, USA). Chi-Square test was used to compare categorical variables. Further analysis was used to examine the association between independent variables and dependent variable. Instead of choosing the variables for multivariate model based on the conventional method ie., significant variables from univariate analysis, the authors included clinical important associated variables into the final multivariate analysis.

Results

A total of 112 female outpatients, with 56 patients on fluoxetine and 56 patients on escitalopram who attended the Psychiatric Clinic UKMMC during the study period were included in the study. The mean age of the subjects was about 40 years old with average 15 years of marriage. Majority of patients were Malay (49.1%) followed by Chinese (38.4%) and Indian (12.5%). Academically, most patients had

their education until secondary level (37.5%) and tertiary level (40.2%). Majority of patients were employed (63.4%). More than half of the subjects had monthly family income of more than RM3000 (54.5%). Majority of the subjects had child(ren) (80.4%). Most patients had one to two children (42.9%). In term of frequency of sexual intercourse in the last 4 weeks, it was higher in subjects on escitalopram than those on fluoxetine. 33.9% of the subjects were using contraceptive methods. 22.3% experienced dysmenorrhoea.

Table 1. Dosage and duration of antidepressant usage of the subjects

	Treatment group	
	Fluoxetine	Escitalopram
Dosage, mean (sd)	30.71 (10.76)	12.32 (4.15)
Duration in months, mean (sd)	50.04 (34.37)	22.70 (11.87)
Dosing classification* Low High	27 (48.2) 29 (51.8)	38 (67.9) 18 (32.1)

*Low = (=30mg for fluoxetine or = 15mg for escitalopram); High = (> 30mg for fluoxetine or > 15mg for escitalopram); Based on classification described by Gartlehner and colleagues (2007), there were more subjects in the escitalopram group (67.9%) in the low dosing class compared to fluoxetine (48.2%).

Table 2. Comparison of overall and each domain of female sexual dysfunction associated with fluoxetine and escitalopram based on MVFSFI

	Female sexual dysfunction	Chi-Square	OR (95% CI)	
	Present N (%)	**Absent N (%)**		
Overall Sexual Function				
Fluoxetine	31 (55.4)	25 (44.6)	5.203	2.415 (1.125-5.184)
Escitalopram	19 (33.9)	37 (66.1)		
Desire Domain				
Fluoxetine	36 (64.3)	20 (35.7)	8.038	3.000 (1.390-6.473)
Escitalopram	21 (37.5)	35 (62.5)		
Arousal Domain				

Fluoxetine	28 (50.0)	28 (50.0)	3.689	2.111 (0.980-4.548)
Escitalopram	18 (32.1)	38 (67.9)		
Lubrication Domain				
Fluoxetine	26 (46.4)	30 (53.6)	3.058	1.988 (0.916-4.315)
Escitalopram	17 (30.4)	39 (69.6)		
Orgasm Domain				
Fluoxetine	33 (58.9)	23 (41.1)	3.571	2.059 (0.970-4.371)
Escitalopram	23 (41.1)	33 (58.9)		
Satisfaction Domain				
Fluoxetine	15 (26.8)	41 (73.2)	1.287	1.683 (0.681-4.156)
Escitalopram	10 (17.9)	46 (82.1)		
Pain Domain				
Fluoxetine	10 (17.9)	46 (82.1)	0.265	1.304 (0.473-3.595)
Escitalopram	8 (14.3)	48 (85.7)		

*p<0.05, ** Sexual dysfunction = (= 55 in MVFSFI score), OR = Odds Ratio, CI = Confidence Interval

Table 3 Analysis of the determinant for female sexual dysfunction

Variable	β	SE	p value	Adjusted Odds Ratio	95% CI
Antidepressant Fluoxetine Escitalopram	0.955	0.558	0.087	2.599	0.870-7.764
Dosing classification Moderate to high Low	1.588	0.472	0.001	4.892	1.941-12.331
Duration of usage	0.001	0.010	0.921	1.001	0.982-1.020
Age	-0.015	0.060	0.801	0.985	0.875-1.109
Smoking Yes No	1.771	0.903	0.050	5.878	1.002-34.473
Alcohol Yes No	-1.585	1.080	0.142	0.205	0.025-1.703
Years of marriage	0.087	0.058	0.134	1.091	0.974-1.222
Menopause Yes No	-0.164	0.797	0.837	0.849	0.178-4.046

Questions

**1.	In the exclusion criteria, women within 2 months postpartum period were excluded. What is the most likely reason why they were excluded in this research?** (1 mark).
Sexual activity is less practised during confinement period

**2.	The statistical power was determined at 80% with the precision of 5% for the study.**
**(a)	Define the meaning of statistical power** (2 marks).
*The **power** (P) of a statistical test is the probability that the test will reject a false null hypothesis (i.e. that it will not make a Type II error). As power increases, the chances of a Type II error decrease.*

**(b)	Besides increasing the sample size, name two other ways to increase the statistical power for a study** (2 marks)**.**
*i.	Using parametric rather than non-parametric statistical test*
*ii.	Increase the level of significant (α) to 0.001 from 0.05*

**3.	Outline one significant finding on the sexual domain in Table 2** (1 mark). **Explain the meaning of the significant finding** (2 marks).
The only domain of sexual dysfunction that showed statistically significant difference between the two groups was desire (1 mark).
Patients on fluoxetine were found to be 3 times (95% CI: 1.39-6.47) more likely to suffer from desire problems as compared to patients on escitalopram, and it is significant statistically because the OR do not cross 1. (2 marks).

**4.	(a) Name the type of statistic used in Table 3?** (1 mark).
Multivariate logistic regression analysis / logistic regression / regression analysis

**(b)	Describe 3 assumptions that were made in the statistical analysis for (a).**(3 marks)
*i.	Samples are taken at random*
*ii.	The relationship between X and Y is linear*
*iii.	Samples are independent, eg. one sample with one scores for each independent variable*

        iv.   Equal variation of Y values in relation to X
        v.   Y values are normally distributed in relation to X

(c)   Describe and discuss the significant findings found in Table 3 (3 marks).
Patients on medium to high dose of fluoxetine and escitalopram were found to be significantly more likely (almost 5 x risk) to suffer from FSD as compared to patients on low dose, ie. OR=4.89, with OR values does not cross 1.

5.   Outline <u>4</u> limitations of this study (4 marks).
      (i)   The treatment duration of the two groups were different (fluoxetine = 50.04 months; escitalopram = 22.70 months). This could bias the results as patients with poor tolerability of sexual dysfunction could have abandoned the treatment.
      (ii)   The dosage was clearly higher than the recommended dosage in fluoxetine group as compared to escitalopram group. Higher dosage could be the main factor for higher rate of sexual dysfunction in the fluoxetine group and bias the result.
      (iii)   Axis II (personality) diagnosis could be a pertinent factor for sexual dysfunction and not measured in the present study.
      (iv)   This is a comparative cross-sectional study and was conducted at only one particular urban centre. These may limit the generalizability of the findings from this study.
      (v)   This is a cross-sectional study in nature, only an association could be determined and not a causal effect.
      (vi)   The relationship of the subjects with their husband as well as the cultural influences on sexual functioning was not investigated in this study. Female sexual dysfunction can actually reflect problems in intimacy and eroticism between couples (Sidi et al. 2007).

6.   What is the clinical implication of the research? (2 marks)
Patients on medium to high dose of antidepressants had higher risk of FSD. Therefore, it is important to advise the sexual side-effects of SSRI to our patients.
Clinician has to be concerned about the dosage of antidepressants prescribed

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MEETING REPORT

FROM NEW ZEALAND TO MALAYSIA: MAKING SMOKING FREE AGENDA FOR PSYCHIATRISTS IN MALAYSIA

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Abstract

Objective: **This article highlights the issues pertaining to psychiatry and smoking as reported in a symposium on smoking cessation in Malaysia.** *Methods:* **A report on a meeting outcome of a symposium on "Making smoking free agenda for psychiatrists in Malaysia."** *Results*: **Smoking is still the number one public health problem and those with mental illness were at a high risk. Despite that, they are often under served in service provision by those caring for them. These shortcoming are seen more and more in Malaysia, where smoking and psychiatry is under researched.** *Conclusion:* **More research are needed on the why and how psychiatrist can play a major role in ensuring that those with mental illness in Malaysia are provided equal opportunities to quit smoking.** *ASEAN Journal of Psychiatry, Vol. 13 (2): July - December 2012: 231-234.*

Keywords: Smoking Cessation, Psychiatry, Psychiatrist, Mental Illness, Malaysia

Introduction

This article attempts to highlight key issues pertaining to psychiatry presented during a recently concluded symposium on smoking cessation in Malaysia. The symposium aims at providing a platform for discussion on smoking and psychiatry, and encouraging more local research in this field. The March 2012 Kuala Lumpur Nicotine Addiction Symposium aimed at disseminating current knowledge, service practices and research in smoking and nicotine addiction locally was organized by the University of Malaya Centre of Addiction Sciences (UMCAS), a research centre promoting research interests and providing treatment services in the field of addiction. This symposium also aimed to gather local smoking cessation practitioners and researchers in a single forum to promote networking and discussion in this field. A multidisciplinary

audience was expected and to the best of our knowledge, this symposium is the first in Malaysia specifically aimed at smoking cessation in a multidisciplinary setting.

A total of 185 participants (excluding speakers) from various agencies and health disciplines including medicine, dentistry and pharmacy attended. Both the private and public sectors were represented. Participants also included a number of international delegates from the ASEAN region and beyond. Out of the nine speakers, four were guest speakers from New Zealand. The guest speakers, currently active in research and service provision, were chosen due to their involvement in making New Zealand smoke free by 2025[1], a world first should they succeed.

A total of 4 plenaries and 4 symposiums covering current public health issues, current

best practice service provision and current and future research happening both globally and in Malaysia was arranged for the two days meeting. Two plenary and symposium sessions were primarily aimed at cessation issues, from practical skills in both pharmacology and psychological treatment to the future treatments being researched. The symposium highlighted that smoking is still the number one public health problem worldwide. An estimated of five millions lives are lost annually as a result of smoking and this number is expected to increase to eight million by the year of 2030. In Malaysia, ten thousand Malaysians died yearly from smoking and quite a number develop health complications [2]. Recently, the Malaysia Global Adult Tobacco Survey (GATS) involving 5112 households with a response rate of 85.3% found that the overall prevalence of current smokers was 23.1% [3]. This meant that there were 4.7 million smokers in Malaysia, increased by 1.7 million compared to the year 2006. Male smoker rated (43.9%) which had been traditionally higher than females (1%) that remained unchanged. This survey also found that those exposed to second hand smoking was higher, up to 70% depending on the location. Second hand smoking has been shown to be equally detrimental to the health.

Psychiatrists' roles in tobacco cessation are very important. Available evidence showed that about 1 in 10 people suffer from some form of mental illness in Malaysia [4]. Prevalence of smoking for those with mental illness has been shown to be two to three times of the general population. They often are highly addicted, smoke at higher rates (more than 25 cigarettes) and have higher relapse rates on quitting [5]. Some studies found that those with mental illness smoke close to 44% of all cigarettes consumed and on average die 25 years earlier than the general population [6]. Despite the dangers of smoking among people with mental illness, there are no prevalence data on smoking among the various mental illnesses in Malaysia apart from bipolar disorder (22.3%) at the best of my knowledge [7]. This lack of information reflects the attitude of researchers and treatment providers of mental health regarding smoking in their care for the mentally ill. This has also been noted in other

studies [5]. Among the reasons mentioned are the lack of training, the lack of confidence and time constraints. Unfortunately psychiatrists were reported to be least likely to advise patients to quit compared to other physicians and in fact more likely to smoke when compared to other physicians [8]. This finding was similar for those in supporting roles in the mental health system, like nurses, and these groups often used cigarettes as a method to engage or to reward patients [9]. The GATS findings reflected that this issue somehow where it was found, that only 52.2% participants mentioned ever being advised to quit within the last year by their general practitioners and this may well be lowest amongst psychiatrists.

Cigarette smoking was also highlighted as the main method of smoking and nicotine the main substance of addiction. Nicotine binds to the $\alpha4\beta2$ nicotine receptors in the brain releasing dopamine, the main neurotransmitter involved with addiction [10]. A vicious cycle ensues similar to the other addictions. The highly addictive nicotine had also been reported to be more addictive than cocaine and methamphetamine. Some reasons reported were that the nicotine was easily absorbed, acts rapidly, easily available and a general been accepted as cigarettes in society.The Doll and Hill study leads to the 1964 Surgeon General report was instrumental in pushing the dangers of smoking to society [10]. Since then, various tobacco control initiatives have been put forward to address this issue. The discovery of nicotine as the main substance of an addiction and the involvement of pharmaceutical companies to research therapeutics drove treatment development. Prior to this situation, the main method of treatment was behavioral therapy. Nicotine replacement treatment (NRT) was the first pharmacological treatment for this addiction and was followed shortly by non-NRT medication like bupropion and more recently, vareniciline. Despite of these treatments, the outcomes are still far from encouraging. Researcher however is supportive towards the use of pharmacological agents for treatment and these medications do assist in successful of quitting compared to the no treatment at a dismal of 1-2% yearly. The main reason

mentioned for this successes was a better control of withdrawal symptoms on quitting.

Psychiatrists in Malaysia take a minimum of four years for training. This training included a formal teaching and clinical training for about three years, and another one year for research. Amongst the major clinical rotations necessary to be conferred was a Clinical Master degree, an exit qualification to become a psychiatrist, is the addiction psychiatry rotation lasting for six weeks. Trainees were expected to be proficient in dual diagnosis disorders and disorders of addiction including nicotine addiction [11]. However, the Symposium highlighted, on the finding that there were only one institution in Malaysia that provided nicotine addiction as a module in the psychiatrist training program. To complicate the smoking cessation agenda in Malaysia, training to undergraduate medical students was equally lacking. A survey looking at a 10 medical schools in Malaysia in 2011[12], found out that only one school had designated teaching for nicotine addiction in their undergraduate training from the psychiatry department, although three of these had smoking cessation services. Although this survey finding might be bias as it only included third of medical schools in Malaysia and looked at training by one department using a convenient sample, it did however provided a glimpse of training for the future of medical doctors in the country in treating a smokers. Thus, these findings might explains the GATS results and the general reluctance of psychiatrists in advising their patients. Considering that the psychiatry is the champion of mental health in Malaysia, they therefore play an important role in cultivating, motivating and developing ownership in the treatment of nicotine addiction and not only to other general addictions.

It is to be noted that Malaysia has a signatory for the Framework Convention on Tobacco Control (FCTC) since 2003[13]. This World Health Organization(WHO) international public health treaty was aims to protect present and future generations from the devastating health, social, environmental and economic consequences of tobacco consumption and the exposure to the tobacco smoke. As one of the signatory of the FCTC, Malaysia had initiated a number of comprehensive tobacco control policies such as taxation, legislation and regulation of tobacco products. Through an Article 14 of the FCTC, Malaysia developed the 2003 Clinical Practice Guideline on Treatment of Tobacco Dependence. This guidelines was intended to assist a health professionals in assisting their patients to quit. Among the treatments recommended by both pharmacological and psychological strategies were provided to all smokers including those with mental illness. Motivational Interviewing (MI) has been recommended to engage and develop motivation to quit whilst Cognitive Behavioral Therapy (CBT) is the psychological intervention with best evidence [2,10]. More than 300 quit clinics have been established, however considering the training issues identified earlier, the provision of services maybe inadequate. The guidelines are currently under review and will be published soon. There is a hope that a better dissemination and training on its use are to be done.

Considering the dangers that smoking possessed to the health, especially those with mental illness, there was a need for psychiatrists to play their part. Psychiatry and smoking is still under-researched and cessation strategies are still lacking internationally. This is more noticeable locally.The Nicotine Addiction Research & Collaborating Centre (NARCC), a Chapter of UMCAS was formed to address these issues in the hope to provide a better care to the mentally ill smokers [14]. The NARCC is one of two main centers in Malaysia that involved actively in research related to smoking.

In conclusion, this article demonstrates that psychiatrists have their duty bound to play a significant role in the tobacco control agenda in Malaysia. There should be bore research needed in the psychiatry in all aspects from the demographic, training and treatment. It is hoped that others will join NARCC in addressing these gaps in Malaysia.

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