

CONTENTS

Advisory Board, Associate Editors and Editorial Board Members	iii-v	Case Reports	
Information for Authors	vi	Parental Issues Contributing To School Refusal: A Case Report	83-85
Original Articles		<i>Siti Rohana Abdul Hadi</i> <i>Aida Harlina Abdul Razak</i> <i>Ek Zakuan Kalil</i> <i>Wan Salwina Wan Ismail</i>	
Sexual Pain Disorders Among Malay Women With Type 2 Diabetes Mellitus In Malaysia	1-7	Antenatal Depression In A High-Risk Pregnancy	86-89
<i>Adibah Hanim Ismail</i> <i>Rawa Baw</i> <i>Hatta Sidi</i> <i>Ng Chong Guan</i>		<i>Tze-Ern Chua</i> <i>Jemie Wan</i> <i>Helen Che</i>	
Concurrent Validity Of The Malay Version Of Perceived Stress Scale (PSS-10)	8-13	Clozapine Re-Challenge With Lithium Supplementation Following Clozapine-Induced Neutropenia	90-92
<i>Sami AR Al-Dubai</i> <i>Ankur Barua</i> <i>Kurubaran Ganasegeran</i> <i>Saad A Jadoo</i> <i>Krishna G Rampal</i>		<i>Ahmad Nabil Md Rosli</i> <i>Rakesh Subbiah</i> <i>T Maniam</i>	
Relationship Between Coping Strategies And Thinking Styles Among University Students	14-22	Memantine Augmentation In The Treatment Of Frontal Lobe Syndrome In Patients With End-Stage Renal Disease – A Case Report	93-96
<i>Fahmi Hassan F S</i>		<i>Aida Abdul Razak</i> <i>T Maniam</i> <i>Hatta Sidi</i> <i>Shalisah Sharip</i> <i>Suriati Mohamed Saini</i>	
Psychometric Properties Of The Malay Version Of The Inventory Of Socially Supportive Behaviour (ISSB)	23-29	Crime Offender With Mental Retardation: A Case Report	97-100
<i>Nasir Yusoff</i> <i>Low Wah Yun</i> <i>Yip Cheng Har</i>		<i>Siti Rohana Abdul Hadi</i> <i>Suarn Singh Jasmit Singh</i> <i>Rabaiah Mohd Salleh</i> <i>Azlin Baharudin</i>	
Electroencephalographic Abnormality And Clinical Response In Patients With First-Episode Schizophrenia Treated With Clozapine	30-38	When Disordered Eating And Disordered Thinking Happen Together In A Young Person? A Case Report	101-105
<i>Amresh Shrivastava</i> <i>Avinash de Sousa</i> <i>Megan Johnston</i> <i>Nilesh Shah</i> <i>Larry Stitt</i>		<i>MH Lai</i> <i>Susan MK Tan</i>	

Outcomes On Psychosocial Factors And Nutrition-Related Quality Of Life: Evaluation Of A 10-Week Nutrition Education Intervention In University Students	39-53	<i>Wan Putri Elena Wan Dali Mohd Razif Shahril Pei Lin Lua</i>
Validation Of The Malay-Translated Version Of The Center For Epidemiological Study – Depression Scale (CES-D)	54-65	<i>Nurul Hazrina Mazlan Affizal Ahmad</i>
Factorial Validity And Reliability Of The Simplified-Chinese Version Of Snaith- Hamilton Pleasure Scale: A Study Among Depressed Patients At An Out- Patient Clinic In Malaysia	66-71	<i>Anne Yee Huai Seng Loh Chong Guan Ng</i>
Men Do Get It: Eating Disorders In Males From An Asian Perspective	72-82	<i>Tan Shian Ming Pearlene Lin Miao Shan Angeline Kuek Shu Cen Lee Ee Lian Evelyn Boon Swee Kim</i>
Opinion		
Future Role For Motivational Interviewing In The Treatment Of Insomnia – An Opinion	106-112	<i>Lucas Lim Jun Hao Taranjit Kaur Dhillon Ng Beng Yeong</i>
Education Section		
Model Answers For A Critical Review Paper: Conjoint Examination For Malaysian Master Of Medicine (Psychiatry) And Master Of Psychological Medicine For November 2013	113-116	<i>Nik Ruzyanei Nik Jaafar Hatta Sidi Salina Abdul Aziz</i>

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ORIGINAL ARTICLE

**SEXUAL PAIN DISORDERS AMONG MALAY WOMEN
WITH TYPE 2 DIABETES MELLITUS IN MALAYSIA**

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Abstract

Objectives: This study aims to determine the prevalence and associated factors of sexual pain disorders among Malay women in Malaysia with type 2 diabetes mellitus. **Methods:** This is a cross-sectional study involving 347 women (174 non-diabetic and 173 diabetic subjects) who attended the diabetic clinic in a university hospital. Sexual pain disorders were assessed using the Pain sub scale of Malay Version of the Female Sexual Function Index (MVFSFI). Socio-demographic information of the subjects was collected with a pre-designed questionnaire. **Results:** Prevalence of sexual pain disorders among Malay women with type 2 diabetes mellitus was 10.4% and the control group was 9.2% but the difference was not statistically significant ($p > 0.05$). Multivariate logistic regression analysis did not find any relevant associated factor with sexual pain disorder. **Conclusion:** Sexual pain disorders among Malay women were not dependent on the diabetic status. Further studies with different population of diabetic patients are needed to confirm the results. *ASEAN Journal of Psychiatry, Vol. 15 (1): January – June 2014: 1-7.*

Keywords: Sexual Pain, Malay Women, Type 2 Diabetes Mellitus

Introduction

Sexual pain disorders are one of the female sexual dysfunctions that may impair sexual and interpersonal and emotional functioning for most women worldwide. An international consensus committee recently divided sexual pain disorders into three categories, which are dyspareunia, vaginismus and non-coital pain disorder [1]. Dyspareunia is defined as persistent or recurrent pain with attempted or complete vaginal entry or penile-vaginal intercourse [2]. As for vaginismus, it is defined as persistent difficulties to allow vaginal entry of a penis, finger, and/or any object, despite the woman's expressed wish to

do so. There are variable involuntary pelvic muscle contraction, (phobic) avoidance, and anticipation/fear/experience of pain. Structural or other physical abnormalities must be ruled out/addressed [2]. Non-coital sexual pain disorder is recurrent or persistent genital pain induced by non-coital sexual stimulation.

Sexual pain disorders may develop from a number of biological factors such as hormonal, inflammatory, muscular, neurologic, vascular and connective causes [3]. Increased risk of vaginal infections and/or decreased vaginal lubrication has been postulated to be the cause of higher prevalence of dyspareunia among women with diabetes mellitus [4,5]. Presence

of neuropathy, vascular complications, and concomitant with other's sexual dysfunctions such as loss of desire, arousal disorders, and orgasmic difficulties make women with diabetes mellitus more likely to experience sexual pain during intercourse [6,7].

Dyspareunia or painful intercourse is a common symptom among sexually active women. A random population survey (GSSAB) in 2001-2002 involving nine Asian countries found that sexual pain disorders among women are less common compared to other dysfunctions [8]. However, a study done in 2007 among general population at a primary care clinic in Kuala Lumpur, Malaysia found that sexual pain disorder is the second most common sexual dysfunction (67.8%) after sexual desire disorder [9]. In women with type 2 diabetes mellitus, several studies have shown no significant risk of dyspareunia [10,11,12], while others have shown a significantly higher prevalence of dyspareunia with rates from 4%⁶ to be as high as 42% [13]. Despite the inconsistent results and knowing that women with diabetes mellitus are prone to experience sexual pain disorders, this study intends to measure the prevalence and associated factors of sexual pain disorders among diabetic patients in one of the university hospitals in Malaysia.

Methods

This is a cross-sectional study aimed to determine the prevalence and associated factors of sexual pain disorders among women with diabetes mellitus. According to previous studies [13, 9], sample size of 347 sexually active women is adequately enough to achieve the objectives. The study was carried out at the Universiti Sains Malaysia Hospital for 10 months. They were grouped into a diabetic (173) and non-diabetic groups (174). Systematic random sampling was used in this study. Diabetic women were those attending the Diabetic clinic and non-diabetic women were those attending outpatient clinics for other medical illnesses. Women with those known psychiatric problem, who are pregnant or in post partum period, post menopausal (physiological/surgical), on hormonal contraception and known to have chronic illnesses such as stroke, end-stage renal disease, and chronic immobilization

(bedridden, limbs amputation) were excluded. The study was approved by the ethics committee of the university. Written informed consent was obtained from all patients before enrolment in the study.

All women were given a structured questionnaire that consists of two parts. Part I is the patient socio demographic and marital profile, while part II is the Malay Version of Female Sexual Function Index (MVFSFI). The MVFSFI was developed and validated in 2007 [14]. This questionnaire contains 19 questions and categorizes sexual dysfunction into the domains of desire, arousal, lubrication, orgasm, satisfaction, and pain. The questionnaire assessed participant's sexual function during the last four weeks. The sensitivity and specificity of MVFSFI were 99% and 97% respectively. The sensitivity and specificity for each domain were also established in which sexual pain disorders had 86% sensitivity and 95% specificity. Pain was assessed as frequency during and after sexual activity and level of pain over the past four weeks. Each question in the questionnaire has six options for a patient to choose the most likely answer representing their sexual pain or discomfort during vaginal penetration within four weeks prior to the time of answering the questionnaire. The score for each answer is given from 0 to 5. A total score of ≤ 7 was used as the cut-off point for the sexual pain disorders. Those who scored less than the cut-off point were indicated to have sexual pain disorders.

Statistical analysis was done using the SPSS version 12 software. The prevalence of sexual pain disorders was obtained through descriptive analysis. Simple logistic regression was used as a screening in selection of variables for further analysis. All variables with *P* value less than 0.3 and clinically significant variables were included in Multiple Logistic regression. This *P* value was set larger than the level of significance to allow for more important variables to be included into the model. A *P* value < 0.05 was considered statistically significant in Multiple Logistic regression.

Results

Table 1 shows the socio-demographic and

clinical characteristics of the participants. A total of 173 women with diabetes mellitus and 174 women without diabetes mellitus participated in the study. The mean age for women with diabetes mellitus and without diabetes mellitus was 42.32 ± 4.76 and 40.98 ± 4.76 years respectively. The mean fasting blood sugar level among women with diabetes mellitus was 9.11 ± 3.80 mol/l.

The prevalence of sexual pain in women with diabetes mellitus in this study was 10.4% and woman without diabetes mellitus was 9.2%. There was no significant difference of sexual pain disorders between the two groups (Table 2).

A total of 197 (50%) participants had primary school education and 174 (50%) are unemployed. There was no significant difference with regards to education level and employment status between women with

diabetes mellitus and without diabetes mellitus ($p > 0.05$). In women with diabetes mellitus, 156 (90%) were married more than 11 years, and for women without diabetes mellitus is 132 (76%). Frequencies of sexual intercourse for both groups are also similar in which majority of them had sexual intercourse 1-2x/week (Table 1). There was no association between duration of marriage and sexual pain between groups.

One hundred and forty two (82%) women with diabetes mellitus were obese. Hypertension and dyslipidemia were common medical illnesses that represent 59.5% and 47.4% respectively among women with diabetes mellitus. Multivariate analysis showed that obesity, hypertension and dyslipidemia did not have a significant association on sexual pain disorders among women with diabetes mellitus.

Table 1. Socio-demographics and clinical characteristic of participants with and without Diabetes Mellitus (DM)

Variable	Women with DM (n=173)		Women without DM (n=174)	
	Mean (SD)	n (%)	Mean (SD)	n (%)
Age (years)	42.32 (4.76)		40.98 (4.76)	
≤40		57(32.9)		80(46.0)
>40		116(67.1)		94(54.0)
Fasting blood sugar (mmol/L)	9.11(3.80)		4.60(0.54)	
Education level				
Primary		96 (55.5)		101 (58.0)
Secondary		56 (32.4)		65 (37.4)
Tertiary		21 (12.1)		8 (4.6)
Employment				
Employed		75 (43.4)		98 (56.3)
Unemployed		98 (56.6)		76 (43.7)
Monthly Family Income (RM)				
<1000		13 (7.5)		6 (3.4)
1000-1999		50 (28.9)		44 (25.3)
2000-3000		49 (28.3)		51 (29.3)
>3000		61 (35.3)		73 (42.0)
Age of Husband (years)				
<40 years		21 (12.1)		46 (26.4)
41-50 years		102 (59.0)		101 (58.0)
>50 years		50 (28.9)		27 (15.5)
Duration of marriage (year)				
≤10 years		17 (9.8)		42 (24.1)
11-20 years		77 (44.5)		77 (44.3)

> 20 years		79 (45.7)		55 (31.6)
Frequency of Sexual Intercourse				
1-2x/month		37 (21.4)		34 (19.5)
1-2x/week		122 (70.5)		109 (62.6)
≥ 3x/week		14 (8.1)		31 (17.8)
Body Mass Index Category				
Underweight		5(2.9)		4(2.3)
Normal		26(15.0)		50(28.7)
Pre-Obese		65(37.6)		74(42.5)
Obese I		61(35.3)		38(21.8)
Obese II		9 (5.2)		7(4.0)
Obese III		7(4.0)		1(0.6)
Hypertension				
Yes		103(59.5)		36(20.7)
No		70(40.5)		138(79.3)
Dyslipideamia				
Yes		82(47.4)		21(12.1)
No		91(52.6)		153(87.9)
Asthma				
Yes		3(1.7)		9(5.2)
No		170(98.3)		165(94.8)

Table 2. Prevalence of sexual pain disorders between Malay women with and without based on Malay Version of Female Sexual Function Index (MVFSFI)

	N	Sexual Pain Disorder		Chi-square	p value	OR (95% CI)
		Absent n (%)	Present n (%)			
Non-diabetic	174	158 (90.8)	16 (9.2)	0.144	0.705	1.147 (0.564-2.330)
Diabetic	173	155 (89.6)	18 (10.4)			

OR=odds ratio; CI=confidence interval

Table 3. Multivariate analysis of the associated factors for female sexual pain disorders in the subjects (N=347)

	β	S.E.	p value	Adjusted OR	95.0% C.I.	
					Lower	Upper
Age (years)	0.094	0.075	0.210	1.099	0.948	1.273
Employment No Yes	-0.906	0.463	0.051	0.404	0.163	1.003
Education Primary Secondary and above	-0.648	0.428	0.130	0.523	0.226	1.211
Age of Husband age-(years)	0.012	0.049	0.803	1.012	0.920	1.114
Duration of marriage (years)	-0.016	0.047	0.738	0.985	0.899	1.079
BMI	0.017	0.043	0.687	1.017	0.936	1.106
Hypertension No Yes	-1.208	0.494	0.014	0.299	0.114	0.787
Dyslipidemia No Yes	-0.786	0.439	0.073	0.456	0.193	1.077

S.E. = standard error; OR=odds ratio; CI=confidence interval

Only relevant clinical and demographic factors were included in the multivariate analysis.

Discussion

There is extensive literature on the prevalence of sexual pain disorders but there are no consistent results among women with type 2 diabetes mellitus. Prevalence of sexual pain disorders among women with type 2 diabetes mellitus in our study was lower (10.4%). A similar result was also observed by other studies [6, 15]. However, prevalence of sexual pain disorders among general population in Malaysia was higher (67.6%) [9] including studies done among women with diabetes mellitus internationally [13,16,17,18]. Several possible explanations for inconsistency in prevalence were proposed such as study design and population differences [6, 13, 16, 17, 15]. No significant difference of sexual pain disorders was found in this study between women with diabetes mellitus and without diabetes mellitus. This finding is in concordance with other studies [12, 13, 16, 17]. Other's studies found that there was significant difference of pain disorders among women with diabetes mellitus and control subjects [19, 20]. A few studies have shown that sexual pain disorders is significant in diabetic women who have a marital relationship problem with their husband compared to non-diabetic women [13,20]. Unfortunately, marital relationship problem was not assessed in this study as well as other studies [12,16,17]. Marital relationship problem has been suggested as a major cause of dyspareunia but whether the marital relationship is a secondary cause of sexual difficulty is still uncertain [21], and further studies are needed to determine this relationship. Reduced sensation of pain among women with type 2 diabetes mellitus was also found to be a cause of low prevalence. Improvement in diabetes management as fasting blood sugar of less than 10mmol/l could be one of the contributing factors for lower prevalence of sexual pain disorders in this study.

Dyspareunia is a common symptom from variety of causes and the prevalence from various degrees of dyspareunia[13,16] (vaginal discomfort, vaginal dryness) was higher, especially among postmenopausal diabetic women[22] as diminished estrogen levels are associated with decreased lubrication and vaginal atrophy. Although women with

diabetes mellitus are at high risk of having sexual pain disorders, specific associated factors in each category (dyspareunia, vaginismus and non-coital pain disorder) are difficult to identify in this study. Three items in the FSFI's questionnaire asking women about the experience of discomfort or pain during vaginal penetration in the past four weeks might not be truly precise for either dyspareunia, vaginismus or non-coital pain disorder. No significant associated factor with sexual pain disorders was found during this study. However, the Global Study of Sexual Attitudes and Behaviors (GSSAB) reported that younger age group, poor health, infrequent sex and low expectations for the future of relationship are the factors associated with pain disorder among women aged 40 to 80 years old[8]. Another study also thought that younger age group was clinically a risk factor for sexual pain disorders even though statistically not significant [16]. It is supported by knowing that not all women with dyspareunia have physical findings to state that they have sexual pain disorders [23]. In diabetes mellitus, presence of vaginal dryness, infection and other's urogenital problems make them prone to get dyspareunia. There were a few other studies that share similar findings [16,23]. Psychological symptoms such as depression and anxiety are also found to be significantly associated with dyspareunia in diabetic patients [6,22].

As a conclusion, the prevalence of sexual pain disorders in women with diabetes mellitus and without diabetes mellitus in this study is lesser than the previous studies that have been performed in the general population in Malaysia. However, there is no significant difference between these two groups. This result implies that having diabetes is not a risk factor for getting sexual pain disorders, especially among Malay women. Limitation of the study includes the inability to document the marital relationships and psychological status of studied population. These factors might support the fact that risk of having sexual pain is not related to diabetes. The present study also did not find any significant associated factors in relation to sexual pain disorders. Further studies with different population of diabetic patients are needed to confirm the results.

Acknowledgements

We would like to thank the patients and also the research committee at Universiti Sains Malaysia, Kelantan which had approved and supported this research financially.

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Received: 20 March 2013

Accepted: 2 July 2013

ORIGINAL ARTICLE

**CONCURRENT VALIDITY OF THE MALAY VERSION OF
PERCEIVED STRESS SCALE (PSS-10)**

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Abstract

Objective: This study aimed to assess the concurrent validity of the Malay version of the Perceived Stress Scale (PSS-10) PSS-10 item. **Methods:** A cross-sectional study was conducted among all students in a medical faculty in Malaysia. The questionnaire included three parts; socio-demographic correlates, PSS-10 and the validated Malay version of Depression Anxiety and Stress Scale-21 item (DASS-21). Spearman's correlation coefficient was used in the analysis. **Results:** Stress subscale of DASS -21 correlated positively with the total score of PSS-10 ($r = +0.50, p < 0.001$), positively with the negative subscale of PSS-10 ($r = +0.36, p < 0.001$) and negatively with the positive subscale of PSS-10 (perceived coping) ($r = -0.33, p < 0.001$). **Conclusion:** The Malay Version of PSS-10 has fair correlation with the stress subscale of DASS-21. This confirmed the concurrent validity of this scale, which further strengthened the previous evidence that the Malay version of PSS-10 was a valid tool to measure stress in Malaysian university students. *ASEAN Journal of Psychiatry, Vol. 15 (1): January – June 2014: 8-13.*

Keywords: Malay, Version, Stress, Medical, Students, Psychological Distress

Introduction

Psychological stress is an important health issue due to its association with many adverse health outcomes including cardiovascular disease, cancer and premature death [1-3]. Previous studies reported that 47.6% of medical students in Malaysia [4] and 61.4% of medical students in Thailand were subjected to a significant level of perceived stress [5] during their training. Lazarus and Folkman (1984) defined stress as an interaction between the individual and the environment (stressors) which is appraised by the individual as

threatening or overwhelming his resources and well-being [6]. Accordingly, both internal and external conditions must exist for a stress response to occur. This explains why individuals can respond differently to the same stimulus. People will tend to manifest different interpretations and coping styles in each situation (stressor) depending on their history, experiences and personal characteristics [7]. Perceived Stress Scale (PSS) was developed by Cohen et al (1983) [8] to measure stress in a way that reflects the definition by Lazarus and Folkman (1984) [6]. This validated and reliable self-reported questionnaire had been

used in various clinical settings, cultures and populations and was translated and validated in many languages, including Chinese (Mandarin) [9], Greek [10], Japanese [11], Portuguese [12], Thai [13] and Malay [14].

An earlier study investigated the factor structure, internal consistency and reliability of the Malay version of the PSS-10 item questionnaire among the Malaysian medical students. It was found that the Malay version of PSS-10 item questionnaire had the same factor structure as the original English version with satisfactory internal consistency and test-retest reliability [14]. However, no study was conducted to assess the concurrent validity of the Malay version of PSS-10 item for evaluating all the psychometric properties of this scale. The present study was conducted to assess the concurrent validity of the previously used Malay version among medical students. This study was a part of a larger project aimed at investigating the level of stress, sleep disorders, anxiety and depression among medical students in Malaysia.

Methods

This cross-sectional study was conducted among medical students in a private university in Malaysia. All the 406 were approached. Approval was obtained from the Ethical Committee of the university. Permission for access to the students before or after a lecture was obtained from the coordinators and lecturers. They were assured regarding their freedom to participate in this study and their participation would not affect their progress in the course. Confidentiality was assured and a written consent was obtained from each of the participants. The questionnaire was pilot tested on ten students who were not participating in the study.

Instruments

Perceived Stress Scale (PSS-10)

Perceived Stress Scale-10 (PSS-10) is used to measure the degree to which one perceived one's life as stressful. Here, the participants are asked to respond to each question on a 5-point Likert scale ranging from 0 (never) to 4 (very often), indicating how often they had felt stressful within the past month. The scores ranged from 0 to 40, where higher scores

indicated greater perceived stress [15]. Six out of the 10 items of PSS-10 are considered negative (1 - 3, 6, 9, 10) and the remaining four as positive (4, 5, 7, 8) which represented 'perceived distress' and 'perceived coping' respectively [15].

The PSS-10 had demonstrated good internal (intra-observer) reliability with Cronbach's alphas ranging from 0.78 to 0.91 and test-retest reliability coefficients ranging from 0.55 to 0.85 [8]. The Malay version of PSS-10 used in this project was the same version used in a previous study [14]. The process of translation and validation of the Malay version was summarized in the prior article. The factor analysis of the Malay version of PSS-10 showed two latent factors (positive and negative) and the test-retest analysis was also found of good reliability [14]. The negative factor was named 'perceived distress' while the positive factor was named 'perceived coping'.

The Depression, Anxiety and Stress Scale (DASS-21)

The Depression, Anxiety and Stress Scale - 21 Item (DASS-21) is a set of three self-report scales designed to measure the negative emotional states of depression, anxiety and stress. Each of the three DASS-21 scales contains seven items [10]. Subjects are asked to indicate the extent to which they experience each of the items on a 4-point Likert scale ranging from 0 (Did not apply to me at all) to 3 (Applied to me very much, or most of the time). Previous studies on the psychometric properties of DASS-21 showed that this scale was a reliable and validated measure to be used for clinical [16] and non-clinical samples [17]. It was used as a gold standard to assess the concurrent validity of PSS-10 item in the literature [10]. The Malay version of DASS-21 had good psychometric properties for the Malaysian general population [18-20].

Statistical analysis

Data analyses were performed by using the Statistical Package for Social Sciences (SPSS) version 16.0 for windows. The two positive and negative factors of PSS-10 were obtained by summing the positive items (item items 4, 5, 7 & 8) and the negative items (items 1, 2, 3, 6, 9, 10) respectively. Total scores for PSS-10 were obtained by summing across all the 10

items after reversing the scores on the four positive items. The stress subscale of DASS-21 was used in the analysis for the purpose of concurrent validity assessment. Scores for stress subscale of DASS-21 were calculated by summing up the scores for relevant items. Each score obtained was multiplied by 2 to calculate the final score as DASS-21 was a shorter version of DASS-42 [10]. Normality statistical test for PSS-10 and stress subscale of DASS-21 showed abnormal distribution for both scales. To assess the concurrent validity of PSS-10, Spearman's coefficient was used for comparison. Cronbach's alpha coefficient of the PSS-10 was obtained for internal reliability. A *p-value* <0.05 was considered as statistically significant.

Results

Socio-demographic characteristics

Among a total of 406 questionnaires distributed, 390 were returned by the students in filled-up form. Four questionnaires were excluded from the study due to incomplete data. Hence, a total of 386 questionnaires were finally analyzed for this study (95% response rate). The Majority of the participants were female (70.5%), single (96.6%) and Malay (60.1%) with a mean age of 21.9 (SD=2.8). More than half were in the preclinical phase of medical school (58.5%) (Table 1).

Table 1. Socio-demographic characteristics of the participants (n=386)

		N	%
Gender	Male	114	29.5
	Female	272	70.5
Age	≤21	210	54.4
	>21	176	45.6
Marital status	Single	373	96.6
	Married	13	3.4
Race	Malay	232	60.1
	Chinese	17	4.5
	Indian	121	31.3
	Other	16	4.1
Phase of study	Pre-Clinical	226	58.5
	Clinical	160	41.5

Table 2. Descriptive statistics from the scores of PSS-10 and stress subscales of DASS- 21

	Mean	SD	Minimum	Maximum
Stress subscale of DASS-21	15.5	10.0	0.0	48.00
Total score of PSS-10	20.4	4.9	0.0	40.00

Internal consistency of the PSS-10

Cronbach's alpha coefficient was 0.72 for the total scale, 0.73 for the first factor and 0.74 for the second factor. The value of Cronbach's alpha did not improve by eliminating any of the individual items.

Concurrent validity: correlation between PSS-10 and DASS-21

Descriptive results of PSS-10 and stress subscale of DASS-21 (mean, SD, minimum and maximum) are presented in table 2. The

total score of PSS-10 correlated positively and significantly with the score of stress subscale of DASS-21 ($r = 0.50, p < 0.001$). The negative subscale of PSS-10 (perceived distress) correlated positively and significantly with the score of stress subscale and the total score of DASS-21 ($r = 0.36, p < 0.001$). Positive subscale of PSS-10 (perceived coping) was correlated negatively and significantly with score of stress subscale of DASS-21 ($r = -0.33, p < 0.001$) (Table 3).

Table 3. Correlation between the scores of PSS-10 and subscales of DASS- 21

	Total score of PSS-10	Negative subscale of PSS-10 (perceived distress)	Positive subscale of PSS-10 (perceived coping)
Score of stress subscale in DASS- 21	0.50	0.36	-0.33
	P<0.001*	P<0.001*	P<0.001*
*Spearman correlation			

Discussion

The ultimate validity of a scale is its criterion validation by making comparisons to the gold standard. This first study in Malaysia was designed to assess the concurrent validity of the Malay version of the PSS-10 scale. Here, DASS-21 was used as the reference or “gold standard” as it appeared to exhibit a more stable and distinct factor structure in comparison to the longer version (DASS-42) [21].

This study reported that PSS-10 score correlated positively with the stress subscale of DASS-21. This confirmed the concurrent validity of PSS-10 scale. A prior study found that PSS-10 score correlated positively and moderately with stress measured by 'Live-Event Scale'. The mean PSS-10 score was significantly lower among those who indicated that they had 'ever experienced stress' in comparison to those who said there were things in life that were upsetting or bothersome [22]. Other studies on PSS-10 in different languages had shown that PSS-10 had concurrent validity with a number of measures including the Beck Anxiety Inventory, Beck Depression Inventory (BDI)[9], State-Trait Anxiety Inventory (STAI), Thai Depression Inventory (TDI) [13] and DASS-21[10].

In the current study, when the two factors of PSS-10 were separately tested for correlation with stress subscale of DASS-21, the positive subscale (perceived coping) correlated negatively with the stress subscale of DASS-21 while the negative subscale (perceived distress) correlated positively. Similar results were reported by Andreou et al (2011)[10]. The opposite correlations of the positive and negative factors of PSS-10 with this variable provided further strengthened the evidence of manifestation of two factors in PSS-10 and its

concurrent validity. The strength of this study is represented by the anticipated direction of correlation between the variables and its statistical significance. Although, the moderate and weak values could be an issue in this study, we can argue that our finding is consistent with the literature. Yu and SC (2010) examined the correlation between the PSS-10 and the Trait Anxiety Inventory (TAI) and found $r = 0.53$. In the same study, the correlation coefficient (r) between PSS-10 and menopausal symptoms ranged from 0.18 to 0.41. The authors described that correlation as "adequate correlation" and accordingly they concluded that the concurrent validity of PSS-10 was confirmed [23]. Furthermore, Leung et al (2010) confirmed the concurrent validity of the PSS-10 depending on a correlation coefficient of $r = 0.24$ between the PSS-10 and depression scale [24].

Limitations

This study was cross-sectional in nature. Hence, there was no scope for us to confirm the predictive validity of this scale. The study sample was exclusively made up of students from a single university. This may restrict the generalizability of the findings from this study. In addition discriminant validity of the questionnaire was not investigated in this study.

Conclusion

The Malay version of PSS-10 has fair correlation with the stress-subscale of DASS-21. This confirms the concurrent validity of this scale. The results of this study further strengthen previous evidence that the Malay version of PSS-10 is valid and suitable as a research tool to measure stress in Malaysian university students. It is recommended that the validity of this scale be further tested in the

general population and other professional undergraduate schools.

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Received: 2 June 2013

Accepted: 15 July 2013

ORIGINAL ARTICLE

RELATIONSHIP BETWEEN COPING STRATEGIES AND THINKING STYLES AMONG UNIVERSITY STUDENTS

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Abstract

Objective: This study aims at exploring the correlation between coping strategies and thinking styles. **Methods:** The study sample consisted of 62 students (30 females and 32 males) from the Medical Science College in Hodeidah University, Yemen. They responded to the Scale of Coping styles and Inventory of Thinking styles questionnaire. **Results:** Active coping strategy was affected significantly by legislative, local and hierarchical thinking styles, while avoidance strategy was affected significantly by oligarchic thinking styles, behavioral conducts by judicial, global and anarchic thinking styles. Significant gender differences were found in behavioral conducts (from coping strategies), anarchic and internal thinking styles with advantage with females. **Conclusion:** Coping strategies are not independent of thinking styles. These results offer justification and support for future research in larger samples. Potential implications of the impact of thinking styles on coping strategies are also considered. *ASEAN Journal of Psychiatry, Vol. 15 (1): January – June 2014: 14-22.*

Keywords: Coping Strategies, Thinking Styles

Introduction

Many people are exposed to stressful life events that impede growth and cause further complexity to their lives. These events force people to look for the best ways to cope with these stressful situations. These experiences will help them to form their own coping strategy which becomes one of the fundamental components in the intelligence style of the individual. These coping strategies are formed through life span based on one's experiences and his development. It refers to "cognitive and behavioral responses serving to mobilize, recruit, direct, coordinate, modulate and monitor one's behavioral, emotional and attentional resources in an attempt to adapt to stressful or threatening situations"[1].

There are two general framework for coping strategies in literature, the first framework was contributed by Folkman & Lazarus (1980, 1984) [2, 3] who divided coping strategies into problem-focused coping strategy (refer to

direct activities to modifying the stressor) and emotion-focused coping strategy (refer to regulating emotional tension and arousal). The other coping strategies fall into these two subtypes. But in real life these two strategies are not the only types of coping. We use a lot of other methods in dealing with difficult situations for example, "maintain favorable morale under stress, sustain or restore positive self-regard, and taking a break from chronic or recurrent demands that are stressful in order to restore our commitment" [4]. Therefore, other authors suggested more than two strategies.

The second framework distinguished between approach and avoidance coping strategy [5, 6]. Approach coping is defined as an orientation towards the stressful events, with the person's active attempts at resolving and managing the stressor [7]. It is referred to as sensitization, engagement, vigilance, attention, and monitoring, and it includes cognitive efforts to analyze or change one's thinking about a

problem and behavioral efforts to resolve or deal directly with a problem [8].

Avoidance strategies tend to reduce stress over short periods of time by moving away from the source of the threat as well as prevent anxiety from becoming crippling when confronting uncontrollable stressors. It indicates cognitive and behavioral efforts to deny, minimize or escape from a difficult situation that lead to avoid the stressor and its associated emotions or thoughts, or to lessen distress through emotional expression, such as denial, wishful thinking, day dream, watch TV and substance abuse [9]. In addition, avoidance allows gradual recognition of a threat. Increasing hope and courage are possible when avoidance strategies are used in a partial, tentative, or minimal manner [10,11].

Whatever the types or the number of coping strategies, these strategies depend on the individual's awareness of stressful events and the interaction between the characteristics of the individual and the characteristics of the situation [12]. The choice of appropriate coping strategy is affected by cognitive processes, such as thinking, attention, cognition, memory, classification, reasoning, analysis, synthesis, generalizing, and decision-making [13]. Most relevant findings in the previous studies indicate that the way people interpret and evaluate events plays a key role in how well they cope with these events [14]. Lazarus and Colleagues [15] suggested that the stress and coping strategies are due to knowledge (perception thinking) and the way in which the individual assesses his relationship with the environment, and this relationship is not going in one direction. The environmental requirements, coping strategies with stress, and emotional responses are the result of the impact of each one on the other.

Coping strategies are also affected by thinking styles which refer to individual's preferred ways of thinking and make use of their personal skills in dealing with stressful events [16, 17, 18]. Thinking style is also defined as one's preferred manner of thinking to govern or control daily activities including dealing with stressors, understanding, solving problems and challenges [19,18-20]. Thus, styles greatly affect how people analyze and approach problems, associate with others,

organize, communicate, and lead [21]. And this is what makes thinking styles among the important personal characteristics which seem to influence the performance in stressful conditions and inhibit the effects of disturbing factors [22].

Sternberg (1985, 1990, 1994a, 1994b, 1997) [23-27] in mental self-management theory, describes 13 thinking styles that are divided into five dimensions: (1) functions (include: the legislative, executive and judicial styles), (2) forms (including the monarchic, hierarchic, oligarchic and anarchic styles), (3) levels (include: the global and local styles), (4) scopes (include: the internal and external styles) and (5) leanings (include: liberal and conservative styles) of the mental government. These styles are cognitive in their way of looking at things and correspond preferences in the use of abilities [28].

Few studies found that the differences in thinking styles preferences can affect people's ways of coping with stressful events. Hou and Colleagues (2007) [29] investigate the relationship between thinking styles and coping strategies in China's adolescents whose return to single child family. They found impact of dialectic thinking style on coping strategies. The adolescents with high dialectic thinking style adopted less self-awareness coping; while those with low dialectic thinking style adopted more self-awareness coping and are more likely to employ all types of coping strategies.

Some researchers began to address other aspects of cognitive variables involved in coping strategies and thinking styles which are related to clinical syndromes like depression. Limiãna, Corbalan and Sanchez (2009) [30] identify the cognitive dimensions involved in thinking styles, coping and the psychological adjustment at (118) parents of children with myelomeningocele. The results show the internally focused thinking style contributed the most of psychological adjustment. This thinking style help to detect stable responses associated with caring for children with this syndrome. Epstein and Colleagues (1996) [31] tested the contribution of rational and intuitive thinking styles in predicting coping styles. The results showed that the separate scores and the interaction term were all significant predictors

of two facets of behavioral coping. Burns and Fedewa (2005) [32] examined the relationship between cognitive styles and perfectionistic thinking, and the findings showed that negative perfectionists were poor constructive thinkers and exhibited maladaptive coping in reaction to stress. Positive perfectionists were found to engage problems actively and to be conscious. The present study aimed to identify the impact of thinking styles on coping strategies among students in the Faculty of Medicine at Hodeidah university.

Methods

Participants

The study population consisted of undergraduate students who had been studying throughout the 2009-2010 academic year at Hodeidah University-Yemen. The study sample consisted of 62 students at the second year in the Faculty of Medicine. They were selected by using a simple random method. All data was collected in this survey by pen and paper in three sessions taken time between 50-75 minutes. The mean age of the sample was 20.66 ± 1.187 years (range: 19–23 years). They were 32 men (mean age= 20.84 ± 1.139) and 30 women (mean age= 20.467 ± 1.22).

Measurement

The Thinking Styles Inventory (TSI) [33] developed by Sternberg & Wagner (1994) translated into Arabic by Abu Hashim [34] was used to assess thinking styles among the

university students. The TSI is a self-report inventory with 65 items divided into 13 subscales with five items on each subscale. These subscales are legislative, executive, judicial, monarchic, hierarchic, oligarchic, anarchic, global, local, internal, external, liberal, and conservative. For each item, participants are responding on a seven-point Likert scale: 1 "not at all well", 2 "not very well", 3 "slightly well", 4 "somewhat well", 5 "well", 6 "very well", and 7 "exactly well". Albaili [35] and Abu Hashim [34] reported acceptable reliability and validity estimates for Arabic samples.

The scale of coping styles with stressful life events developed by Leonard Poon (1980) [36] translated into Arabic by Ali [37] was also used in this study. This scale consists of [30] items divided into three subscales: Active Coping (7) Items, Avoidance (13) items, and Behavioral Conducts (10) items. Ali [37] found good validity and reliability for this scale in Egypt. In this study the researcher confirmed validity of instruments by getting a consensus from a panel of experts and assessing the concurrent validity.

Results

The concurrent validity was measured by examining the correlation between the degree of each items and the degree of sub-scale as shown in Tables 1 and 2.

Table 1. Concurrent validity of coping styles scale

Items of active coping strategies	R	Items of avoidance strategies	R	Items of behavioral conducts	R
1	0.42*	11	0.52**	2	0.40*
3	0.49**	14	0.78**	5	0.41*
4	0.76**	19	0.72**	8	0.46*
6	0.56**	21	0.40*	9	0.66**
7	0.43*	26	0.38*	10	0.53**
12	0.39*	29	0.39*	15	0.397*
13	0.42*	30	0.56**	20	0.548**
16	0.36*			22	0.49**
17	0.53**			25	0.51**
18	0.44*			28	0.47**
23	0.43*				
24	0.71**				
27	0.34*				

* $p < 0.005$ ** $p < 0.001$ (Pearson correlation)

Table 2. Concurrent validity of thinking styles inventory scale

Styles	Items	R	Styles	Items	R	Styles	Items	R
Legislative	1	0.658**	Local	5	0.40*	Monarchic	9	0.70**
	14	0.496**		18	0.57**		22	0.82**
	27	0.43*		31	0.48**		35	0.30*
	40	0.52**		44	0.68**		48	0.74**
	53	0.65**		57	0.30*		61	0.34*
Executive	2	0.41*	Liberal	6	0.55**	Oligarchic	10	0.76**
	15	0.67**		19	0.59**		23	0.25*
	28	0.27*		32	0.44**		36	0.84**
	41	0.78**		45	0.50**		49	0.48*
	54	0.36*		58	0.47**		62	0.41*
Judicial	3	0.496**	Conservative	7	0.57**	Anarchic	11	0.57**
	16	0.654**		20	0.71**		24	0.42*
	29	0.734**		33	0.46**		37	0.72**
	42	0.81**		46	0.82**		50	0.42*
	55	0.555**		59	0.70**		63	0.73**
Global	4	0.758**	Hierarchical	8	0.85**	Internal	12	0.64**
	17	0.56**		21	0.65**		25	0.54**
	30	0.614**		34	0.74**		38	0.65**
	43	0.32*		47	0.56**		51	0.77**
	56	0.59**		60	0.47**		64	0.36*
External	13	0.758**	* p<0.005 ** p<0.001 (Pearson correlation)					
	26	0.56**						
	39	0.614**						
	52	0.32*						
	65	0.59**						

The reliability of instrument was tested by getting the Cronbach's alpha coefficient and through test-retest (n=30) assessment. The

results are shown in Tables 3 and 4 respectively.

Table 3. Reliability coefficients of coping styles subscale

Subscales	Cronbach's Alpha	test-retest reliability
Active Coping	0.624	0.689
Avoidance	0.510	0.42
Behavioral conducts	0.489	0.478
Total	0.468	0.607

Table 4. Reliability coefficients of thinking styles inventory

Subscales	Cronbach's Alpha	test-retest reliability
Legislative	0.399	0.448
Executive	0.38	0.392
Judicial	0.663	0.857
Global	0.483	0.828
Local	0.633	0.69
Liberal	0.53	0.49
Conservative	0.75	0.688
Hierarchical	0.68	0.649
Monarchic	0.49	0.88
Oligarchic	0.59	0.39
Anarchic	0.515	0.859

Internal	0.494	0.83
External	0.49	0.48
Total	0.80	0.75

In order to examine the impact of thinking styles on coping strategies, the researcher used

stepwise multiple regression techniques, the results were summarized in Table 5.

Table 5. Contributions of Thinking Styles to coping strategies

Coping strategies	Thinking styles	Constant factor	$\square$	R	R ²	t	Significant level
Active coping	Legislative	26.077	0.190	0.290	0.084	2.348	0.022
	Local	23.170	0.230	0.356	0.127	2.290	0.026
	Hierarchical	23.360	0.188	0.345	0.119	2.194	0.032
	Anarchic	27.390	0.184	0.273	0.074	2.176	0.034
Avoidance	Oligarchic	12.303	0.141	0.300	0.090	2.435	0.018
Behavioral conducts	Judicial	17.985	0.223	0.367	0.135	3.021	0.004
	Global	18.159	0.186	0.314	0.098	2.560	0.013
	Anarchic	16.264	0.262	0.455	0.207	3.962	0.000

As seen in Table 5, active coping strategy had significant correlations with legislative, local, hierarchical, and anarchic thinking styles. Thus, only these four thinking styles were entered into the equation predictive of active coping strategy. Avoidance strategy showed significant correlation with oligarchic thinking

style. The behavioral conducts showed significant correlation with judicial, global, and anarchic thinking styles. Sex differences in coping strategies and thinking styles were examined by independent- samples t test analysis and the results are shown in Table 6.

Table 6. Gender differences in coping strategies and thinking styles

	Gender	Mean	Standard deviation	t-test	Significant level
Behavioral conducts	Male	21.37	3.01	2.35	0.022
	Female	23.13	2.87		
Anarchic	Male	21.46	5.50	2.024	0.047
	Female	24.13	4.81		
Internal	Male	19.18	7.22	2.19	0.032
	Female	22.700	5.10		

Based on Table 6, there was a significant difference between men and women in behavioral conducts. Anarchic and internal thinking styles, whereby women used the behavioral conducts, anarchic and internal thinking style significant more than man.

Discussion

The specific aim of the present study was to investigate the contributions of thinking styles in coping strategies. The study findings showed that active coping strategy was significantly correlated with legislative, local,

hierarchical, and anarchic thinking styles. Local and hierarchical thinking styles together, were found to explain 24.6% of the variance in active coping strategy, whereas legislative and anarchic thinking style together explained 15.8% of the variance. These four thinking styles accounted for 40.4% of the variance in the active coping subscale, which means that 40.4% of changes in the dependent variable (active coping strategy) can be explained by these thinking styles. This model explains the impact of interaction between four thinking styles (legislative, local, hierarchical, and anarchic styles) on active coping strategy, and

this means the individuals who use active coping strategy are active, prefer direct ways to deal with problems, and do more behavioral attempts to solve these problems. People with these features tend to think in ways which are consistent with their coping strategy. This explanation is consistent with the characteristics of these styles of thinking which is described in the mental self-management theory. According to Sternberg's theory people with legislative style prefer problems which require devising new strategies to create their own laws and they enjoy giving commands [17-38]. People with local thinking style, on the other hand are attracted by the practical situations, and they are described as subjective because they take account of everything and they do not leave anything to chance or luck [33]. People with hierarchic thinking style tend to do many things at one time, put their goals in the form of hierarchy depending on their importance and priority. They are realistic, logical and organized in solving problems and decision-making. This explanation does not apply to the people with anarchic style who tend to adopt a method of random and non-compliant in a particular order to solve the problems. Their performance is better when the tasks and positions that are assigned to them are disorganized, and they are confused (33). I did not find appropriate interpretation for the relationship between this style of thinking and active coping strategy.

These findings are partially consistent with the results of some previous studies, for example, Limiãna and Colleagues (2009) [30] who found significant correlations between externally focused thinking style and some aspects of active coping strategy (confrontive, social support seeking, and innovation seeking coping strategies). The presence of externally focused and innovation-seeking thinking styles seemed to be associated with the use of active and changing coping strategies such as confrontation. Gras and his friends (2012) [39] showed the internally focused thinking style contributed the most of psychological adjustment, and behavioral responses associated with caring for children with severe spina bifida.

This study also found that avoidance strategy showed significant correlation with oligarchic

thinking style. Those who have this thinking style are characterized by rushing into the goals of equal importance, and they are nervous, confused, and they have many contradictory goals. So it is rational to show significant relationship with avoidance strategy. These results are partially consistent with the findings from Limiãna and Colleagues (2009) [30] who found a significant relationship between intuition - guided and feeling-guided thinking styles and the use of escape- avoidance coping strategies.

According to the results of this study, coping strategies are not independent from thinking styles and the interaction between these variables may lead to formation of independent cognitive style affected by gender differences. Therefore, the potential applications of the interaction between thinking styles and coping strategies will have a significant impact in future studies.

On the other hand, there were no significant gender differences in most coping strategies and thinking styles except those differences that have emerged in favor of females in the behavioral conducts (from coping strategies) and anarchic and internal thinking styles. These results are not consistent with the results of many previous studies. Al-Shaka'a (2009) [40] found significant differences in coping strategies between males and female students at Al-Quds Open University. The results were in favor of males in positive coping, and in favor of female in negative coping and behavioral actions. Scientific researches confirm the existence of differences between gender in the strategies of coping with stressful life events. The studies conducted on samples of individuals who were exposed to heart disease, found that males tend to use a strategy of confrontation focused on the problem more than a strategy of confrontation focused on emotion as well as escape and avoidance strategies. The researchers stressed that the selection of appropriate coping strategies depends on assessment of the individual for the event [41]. In general, males and females show differences in experiences related to pressures, and pain. Epidemiological studies have confirmed that females described their painful experiences more negatively than males [42, 43].

Other authors also pointed out the existence of sufficient evidence of gender differences with regard to anxiety, suffering and behavior associated with pain. Women were found to express their feelings more significantly compared to men and women and men repeatedly showed differences in behavioral coping styles to pain, suffering, recourse to social support, and a sense of disaster related to suffering [44-47]. Flynn and his Colleagues [48] found that the differences between genders in the coping strategies were not clear when comparing the two groups, and the researchers concluded that effective coping strategies may be less effective in women compared to men in the sample of law students.

The results of current study showed that thinking styles play an important role in the coping strategies, which means that any intervention in thinking styles will also have a direct impact on coping strategies, and this will have an important practical and theoretical implication which, we hope, will be supported by researches in the future.

Acknowledgement

I am grateful to Dr. Wasan Fathi Al Sager, who corrected the grammatical and spelling errors in this study.

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Received: 16 May 2013

Accepted: 21 July 2013

ORIGINAL ARTICLE

**PSYCHOMETRIC PROPERTIES OF THE MALAY
VERSION OF THE INVENTORY OF SOCIALLY
SUPPORTIVE BEHAVIOUR (ISSB)**

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Abstract

Objective: This study validates The Malay Version of The Inventory of Socially Supportive Behaviour. **Methods:** The psychometric properties of the ISSB-Malay Version were examined on sixty-eight women who were Malay native speakers and diagnosed with breast cancer. Respondents answered the questionnaire at three weeks and ten weeks following surgery for breast cancer. **Results:** The Malay Version of ISSB showed excellent internal consistency (Cronbach's $\alpha=0.96$). Test-retest Intraclass Correlation Coefficient (ICC) was 0.03. Small mean differences were observed at test-retest measurement with Effect Size Index 0.18. **Conclusion:** The Malay Version of the ISSB could be an appropriate tool to measure the supportive behavior of the Malaysian population. *ASEAN Journal of Psychiatry, Vol. 15 (1): January – June 2014: 23-29.*

Keywords: Social Support, Malay, Inventory of Socially Supportive Behaviour, Validation, Psychometry

Introduction

Social support is an important dimension in one's adaptation to chronic diseases. In relation to this, many concepts surrounding 'interpersonal relationship' (termed as a relationship which is reciprocally shared by persons) such as 'informal helping' has been brought forward by some other researchers to explain the relationship interaction that happens interpersonally. For example, psychologist describes the concept of 'informal helping' as an interaction in which one partner tries to help the other with an external problem; whereas, internal problem is considered more as a conflict [1]. In addition, it was suggested that the interactions, pertaining to internal problems, are better considered as conflicts rather than helping [1]. From other behavioral scientist's perspective,

they replaced a more precise but unwieldy term, 'help-intended communication' which refers to a dyadic communication where one party is experiencing emotional distress and the other is attempting to alleviate that feeling of distress. This concept has been intensively used in breast cancer studies and other diseases as well [2 - 5].

Related to this concept of support, Barrera and Ainlay [6] introduced one scale namely the Inventory of Socially Supportive Behaviour (ISSB) which was designed to assess how often individuals received various forms of assistance during the preceding month [6]. This ISSB consists of a 40-item self-report measure in which subjects were asked to rate the frequency of each item on the five-point Likert scales, ranging from "not at all" (score zero) to "about every day" (score five). A

higher score indicates a better supportive behaviour received by the respondent. The reliability of the scale had been consistently above 0.9 [7-11]. A large body of research in the last decade has given their attention to explain the processes of natural helping, thus, this area of study is given particular attention. In addition, empirical literature on social support have appeared in numerous disciplines - psychology, sociology, sociology, public health and medicine, in which social support was said to be an important role in the prevention of psychological disorders [12].

The appropriateness of this scale to be used for Malaysian population is questionable due to the unavailability of the scale in Malay version. Thus, this study was implemented to evaluate the psychometric properties of the translated version (i.e. Malay Version) of the Inventory of Socially Supportive Behaviour (ISSB) that was studied among Malay native speakers of women who were diagnosed with breast cancer.

Methods

Women diagnosed with breast cancer were sampled from three main hospitals in the Klang Valley, the capital area of Malaysia - University of Malaya Medical Centre (UMMC), Kuala Lumpur General Hospital (KLGH) and Universiti Kebangsaan Malaysia Medical Centre (UKMMC) (see Figure 1). These hospitals were chosen because they are major hospitals in Klang Valley, Malaysia that have capacity for cancer treatment such as chemotherapy unit. The recruitment of the women with breast cancer were based on the following criteria i.e. new cases of breast cancer, had undergone breast cancer surgery, were planned for adjuvant chemotherapy and had no current major diseases or chronic psychiatric condition. Ethical approval was obtained from the Ministry of Health Malaysia and from the hospitals involved in this study.

The permission for using and translating the ISSB from its original language (English) into Malay language was obtained from Barrera & Ainlay [6]. The 'backwards translation' was used to ensure the meaning equivalence between the original and translated version [13]. Based on this technique, two Malay native speakers (who were also fluent in

English) translated the original version (English) into Malay language. Discussion with the translators was made to decide any difficulties in understanding or ambiguous meaning of certain words or sentences. The same process was done with another two Malay native speakers. Discussion was made with the translators before the final version could be piloted. The backward translation was re-implemented for the controversial words or sentences reported. The final Malay Version of ISSB was distributed to sixty eight women who were diagnosed with breast cancer and planned for chemotherapy. They answered the scale themselves in privacy in the clinic room.

Their names were retrieved from the breast surgeon and oncologist who had the list of new patients with breast cancer planned for chemotherapy. Patients' medical records were also referred to in order to get more information on the patients' medical background. Signatures were sought from all women who participated, prior to the commencement of the study. The consent form was enclosed together with the patient's information sheets, based on the standards format set by the Ethical Committee of the University of Malaya Medical Centre.

The test-retest method was performed at two points of evaluation for the psychometric analyses. These were at approximately two to three weeks following surgery (prior to chemotherapy) and at approximately ten weeks following surgery (during chemotherapy). Socio-medical data was also documented such as age, ethnicity, education, occupation, monthly income, duration of marriage, type of surgery, time since diagnosis and stage of breast cancer.

Five questions were omitted from the original ISSB, as they were not relevant for the marital relationship setting in the current study. These included question 17 (Gave you over USD25), question 22 (Gave you under USD25), question 34 (Loaned you over USD25), question 38 (Provided you with a place to stay) and question 40 (Loaned you under USD25). All the data were analyzed by using the Statistical Package of Social Science (SPSS) Version. Various analyses for the justification of the reliability and validity of

the scale were calculated. The Cronbach's alpha coefficient was presented to interpret the internal consistency [14]. In the meantime, the Intraclass Correlation Coefficient (ICC) which ranges from one (perfectly reliable) to zero was calculated to infer the test-retest reliability [15]. Sensitivity of the scale was assumed by calculating the mean differences between the

evaluations undertaken, by means of a paired *t*-test. The Effect Size Index (ESI) was also accounted [15]. To confirm the validity of the scale, discriminant analysis was performed, which comparing two groups of women namely women who had undergone mastectomy and women who had undergone lumpectomy.

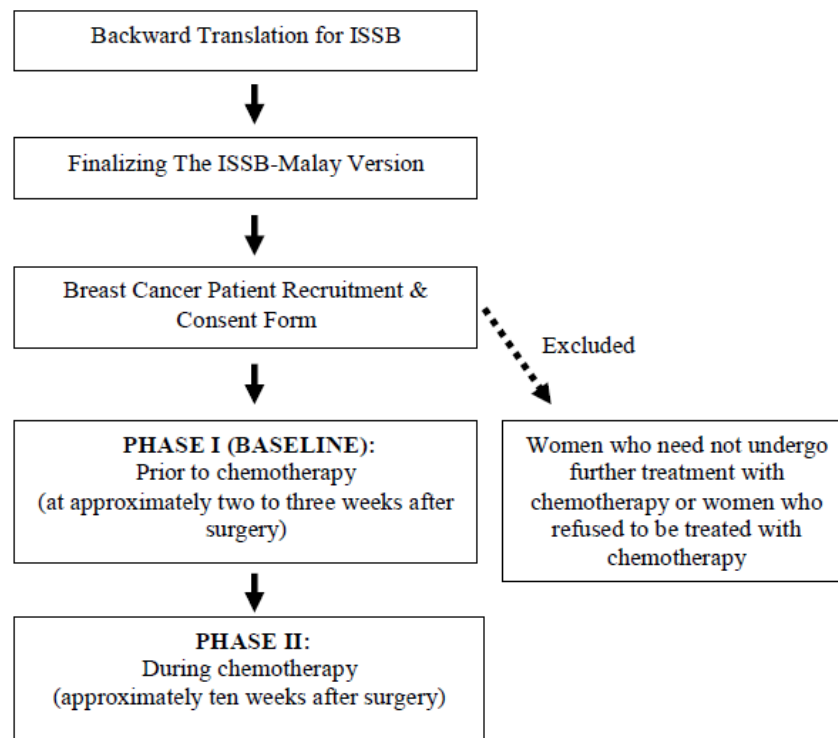


Figure 1: Study Procedure

Results

Table 1 presents the socio-demographic and medical information of the women with breast cancer. The mean age of the women was 46.91 (± 7.65) years old with more than half of them (62%) had regular onset of menstrual cycle. Majority of the women had mastectomy (referring to the removal of entire breast and axillary lymph nodes, whether one side or both side). The remainder were women who had lumpectomy (referring to the removal of the some parts of the breast to

leave the breast cosmetically acceptable while the tumor was removed). Most of the women were diagnosed with stage two (54.4%, $n=37$) and stage three of breast cancer (38.2%; $n=26$). Only a small proportion were diagnosed with stage one (7.4%, $n=5$). The time of diagnosis to their participation in the study was a mean of 52.04 ($sd \pm 2.47$) days. These women had at least a secondary education level (64.7%, $n=44$), with most of the women being unemployed or housewives (58.8%, $n=40$). Their household monthly income were reported to be at least RM3000 or USD854.94 (80.9%, $n=55$).

Table 1. Socio-demographic and Medical Characteristics of the Women with Breast Cancer (N=68)

Parameters	N (%)
Age (Mean $\pm$ SD)	46.91 $\pm$ 7.65 years
Education Levels:	
Primary school	10 (15%)
Lower secondary	20 (29.4%)
Upper secondary	24 (35.3%)
Form 6/Diploma/Certificate	13 (19.1%)
Tertiary	1 (1.5%)
Household Monthly Income:	
Less than RM1000	17 (25.0%)
RM1001 to RM3000	38 (55.9%)
RM3001 to RM5000	6 (8.8%)
More than RM5000	7 (10.3%)
Occupation:	
Professionals	7 (10.3%)
Technicians and associate professionals	5 (7.4%)
Clerical workers	11 (16.2%)
Service workers/shop market sales workers	4 (5.9%)
Housewives	40 (58.8%)
Pensioner	1 (1.5%)
Types of Breast Cancer Surgery:	
Mastectomy	53 (77.9%)
Lumpectomy	15 (22.1%)
Menopausal Status:	
Pre-menopausal	42 (61.8%)
Peri-menopausal	5 (7.4%)
Post-menopausal	21 (30.9%)
Stages of Breast Cancer:	
Stage 1	5 (7.4%)
Stage 2a	21 (30.9%)
Stage 2b	16 (23.5%)
Stage 3a	16 (23.5%)
Stage 3b	7 (10.3%)
Duration of Breast Cancer (Mean $\pm$ SD) (From diagnosis to their participation in the study)	52.04 $\pm$ 2.47 days

Table 2, 3 and 4 showed the various results of analyses of the psychometric properties of the Malay Version of ISSB. The cronbach's alpha was 0.96 (Table 2). In the meantime, the test-retest Intraclass Correlation Coefficient (ICC) was 0.03 (Table 2). Sensitivity of the scale was presented by the mean differences and

Effect Size Index which are 11.51 and 0.18 respectively (Table 3). In term of discriminant analysis, no differences were observed when comparison was made between the mastectomy group and lumpectomy group (Table 4).

Table 2. Internal Consistencies and Intraclass Correlation Coefficient (ICC) of the Inventory of Socially Supportive Behaviour (ISSB) Malay Version

Phase 1 Mean ($\pm$ SD)	Phase 2 Mean ($\pm$ SD)	Cronbach's alpha	Test-retest ICC
112.12 ($\pm$ 33.21)	123.25 ($\pm$ 30.12)	0.96	0.03

Phase 1 = Two weeks following surgery; *Phase 2* = Ten weeks following surgery
 (ICC: Intraclass Correlation Coefficient; SD: Standard Deviation)

Table 3. Sensitivity of the Inventory of Socially Supportive Behavior (ISSB) Malay Version

Phase 1 Mean ($\pm$ SD)	Phase 2 Mean ($\pm$ SD)	Mean Differences	Effect Size Index	<i>p</i> -value
112.12 ($\pm$ 33.21)	123.25 ($\pm$ 30.12)	11.51	0.18	$p < 0.05$

Phase 1 = Two weeks following surgery; *Phase 2* = Ten weeks following surgery
 (ICC: Intraclass Correlation Coefficient; SD: Standard Deviation)

Table 4. The Discriminant Validity of the Inventory of Socially Supportive Behavior (ISSB) Malay Version

Mastectomy Mean ($\pm$ SD)	Lumpectomy Mean ($\pm$ SD)	<i>t</i>	<i>p</i> -value
114.08 ($\pm$ 32.05)	105.20 ($\pm$ 37.39)	0.913	Not Significant

SD: Standard Deviation

Discussion

The internal consistency of the ISSB (Malay Version) was excellent as indicated by the Cronbach's alpha value which is more than 0.75, which is similar to previous studies [7 - 11]. The low test-retest Intraclass Correlation Coefficient (0.03) and small effect size (0.18) were perhaps due to a small sensitivity of the scale to detect any changes. This could probably be due to the treatment situation itself (prior to and during chemotherapy) contributed to the small effect size, and not due to the small sensitivity or undetectable of the scale used in the current study.

For the analysis of discriminant validity, this Malay Version of ISSB showed no differences between the mastectomy and lumpectomy groups. This is almost similar to previous studies who did not find any effect of type of surgery (mastectomy versus lumpectomy) towards sexual satisfaction and marital adjustment [e.g. 16]. We do not argue this

since the dimension of 'help seeking' (as mirrored by 'perceived support'), is typically constructed by the element of relationship quality with others [17]. To date, Yusoff et al. [18] indicated that perceived husband support explained 6% of the variance of breast cancer patient's relationship satisfaction with their husband.

The appropriateness of ISSB-Malay Version to be used for Malaysian population could be accepted with consideration on the limitation of the study. Low Intraclass Correlation Coefficient and Effect Size Index could be due to the short interval of the point of evaluation (i.e. three weeks and ten weeks), as well as the effect of treatment itself. However, the selection of the respondents that was recruited from specific population (i.e. women who diagnosed with breast cancer and were planned for chemotherapy) may possibly give strength to this study in term of the homogeneity of the sample selection. Future research should be undertaken by the

researchers to establish the psychometric properties of this ISSB-Malay Version by commencing the measurement at baseline (two weeks after surgery/prior to chemotherapy) and 6 months afterwards, in order to make a strong justification of the test-retest Intraclass Correlation Coefficient and the sensitivity of the scale.

Face and content validity analyses were not carried out in this study as they need separate qualitative work. For the concurrent analysis, we were unable to perform the analysis since it requires other very similar tools. Thus, we consider this as a limitation of the study. In addition, this study is just a small part form the 'Breast Cancer Psychosocial Study' that was done among breast cancer patients in Klang Valley, Malaysia.

Conclusion

The Malay Version of the ISSB could be an appropriate tool – with cautious, to measure the supportive behavior of the Malaysian population. It is suggested for the future researchers to improve the psychometric properties of the scale, especially with different specific population.

Acknowledgements

The financial support (Fundamental Grant: FP058/2005C) from the University of Malaya (UM), Kuala Lumpur, Malaysia is acknowledged. We would like to thank all participants in this study.

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Received: 2 July 2013

Accepted: 10 September 2013

ORIGINAL ARTICLE

**ELECTROENCEPHALOGRAPHIC ABNORMALITY
AND CLINICAL RESPONSE IN PATIENTS
WITH FIRST-EPISEODE SCHIZOPHRENIA
TREATED WITH CLOZAPINE**

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Abstract

Objective: Clozapine is seen as a gold standard for treatment refractory schizophrenia; however, it is not recommended for the treatment of first-episode psychosis mainly due to concerns of severe side effects. An indicator for response holds tremendous clinical value to select patients who can benefit from clozapine, safely. EEG abnormality has been reported to be one such parameter, yet the definite conclusion of the nature of EEG changes and its predictive value remains undetermined. The present study was undertaken to examine electroencephalographic (EEG) abnormalities and clinical response subsequent to clozapine therapy in schizophrenia. **Methods:** A total of 80 first-episode patients were recruited for a 12 week study, from a tertiary care centre in Mumbai, India. First episode was defined as an illness of less than 2 years duration and first hospitalization since illness. EEG abnormalities, psychopathology, and positive and negative symptoms were examined at baseline and again after 12 weeks of clozapine treatment. **Results:** There were some types of EEG abnormalities found in pretreatment state in at least two-thirds of patients. The number of patients showing EEG abnormality at the end of the 12 weeks of treatment increased significantly, which included theta (θ) frequency, slow waves, and sharp waves. Symptomatically, significant improvement was seen in both positive as well as negative symptoms scores. However, there was no significant correlation between EEG changes and clinical outcome. **Conclusion:** There was significant abnormality in the number of patients exhibiting EEG abnormalities. Baseline pretreatment EEG abnormalities were present in a considerable number of patients, and these EEG abnormalities did not significantly correlate with clinical improvement, except suggesting a trend towards such correlation. *ASEAN Journal of Psychiatry, Vol. 15 (1): January – June 2014: 30-38.*

Keywords: EEG, clozapine, Schizophrenia, Psychopathology

Introduction

Early intervention in psychosis has consistently been shown to result in good outcome in the management of schizophrenia, yet maintaining this outcome after initial response is a challenge. In particular, this lack of maintenance limits the benefits of early intervention programs. High rates of relapse, primarily after discontinuation of antipsychotics, side-effects, and poor adherence to medication, jeopardize the outcome of antipsychotic treatment. The search for safe and effective antipsychotic medications continues in the treatment of schizophrenia. Clozapine is seen as a gold standard for treatment of refractory schizophrenia[1]; however, its response rate is limited to 40-50% of patients, while 30-40% of patients develop serious and life-threatening side effects. The propensity of clozapine to cause these severe adverse effects such as agranulocytosis (1-2%), and an unusually high incidence of seizures[2,3] has limited its utilization in clinical practice in general, including its usage in treatment resistant patients in the early phase of schizophrenia. Consequently, far fewer patients are being prescribed clozapine in comparison to those who need it [4]. Though clozapine causes significantly fewer extra-pyramidal symptoms [5] than any other antipsychotic, it remains a continuous deterrent for clinicians to select clozapine as a treatment option. An indicator for response as well as for side effects, holds tremendous clinical value to select patients who can benefit from clozapine, safely. There have been a number of predictors proposed for clinical response to clozapine, in order to properly select patients, and minimize the risk of side effects, but this has not been met with much success[6]. EEG abnormality has been reported to be one such parameter, yet definitive conclusion of the nature of EEG changes and its predictive value remains undetermined.

EEG abnormalities due to clozapine range from 16% to 75%, with the most common abnormalities being slow wave background abnormality, epileptogenic activity, spikes, and sharp waves [7,8]. The difficulty has been that EEG abnormalities are also seen in a number of other conditions which has

confounded the results of many studies, and makes it difficult to conclude that these EEG changes are exclusively arising due to clozapine. As such, evidence of EEG abnormality due to clozapine remains equivocal. A study by Pillay et al. [9] and another by Treves et al. [10] showed that there is no significant relationship between EEG and clinical response. On the other hand, a study by Khodayri-Rostambad et al. [11] showed that EEG abnormality was a significant predictive factor for clinical outcome. Furthermore, in some patients, clozapine can cause cerebral dysrhythmia; therefore, an argument can be made that those patients who develop dysrhythmia and have abnormal EEG pattern may be separate subgroups of patients. It is possible that these patients get a different clinical response. Regardless of these inconclusive results, EEG abnormality in relation to clozapine needs to be further elucidated.

This study has been undertaken to examine the status of EEG abnormalities subsequent to clozapine treatment, in a relatively early phase of schizophrenia, which has become resistant to a number of antipsychotics. The objective is to determine a potential predictive role of EEG in clinical response.

Materials and Method

Subjects

This study was carried out in a non-governmental, psychiatric hospital in Mumbai, India. This was an open label, prospective cohort study with a 12-week follow-up period. Consenting patients from a cohort of first-episode psychosis (less than 2 years duration of the illness and first hospitalization since the illness) who met diagnostic criteria from the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) were screened and recruited. Diagnosis was confirmed using Structured Clinical Interview for the DSM-IV (SCID). Patients were then selected as per clinical indication in a naturalistic clinical setting for outpatient and hospitalized treatment. 132 patients with treatment-resistant schizophrenia were recruited, 80 (60%) of which completed the 12 week treatment with clozapine. During the 12-week treatment

period, 52 (40%) patients were discontinued because of side effects and worsening of symptoms. No side effects were seen in 32 (37.6%) patients.

Ethics permission was obtained from the Local Independent Ethics Committee of Mumbai. The inclusion criteria were: patients had to be between the ages of 18 and 45 years, and patients were considered treatment resistant as per Kane's criteria (those who have undergone a trial of adequate dose and duration of 3 antipsychotics from at least two different classes of antipsychotics)[12]. The exclusion criteria were: history of severe medical comorbidity (i.e. obesity or hypercholesterimia), history of a previous trial of clozapine, obesity, diabetes, hypertension, neurological disorder, seizure disorder and hematological conditions, cardiac abnormality, and pregnancy. Clinical assessment and a conventional 12-Channel EEG recording, which are commonly used in psychiatry, were done at baseline and 12 weeks[13].

Procedure

Patients were investigated for haemogram, liver, kidney, lipids, sugar, and thyroid function along with electrocardiogram (ECG). Previous medication was gradually tapered off within a period of 3-5 days. Patients were switched to clozapine two days after previous medication was stopped. Benzodiazepines (clonazepam or lorazepam) were used for symptoms of anxiety and agitation, if any after stopping clozapine.. Clozapine was administered in a dose of 25 mg per day, with gradual escalation of 25 mg every fourth day. Therapeutic dose was determined by symptom remission and clinical judgment. No other drugs besides benzodiazepine, trihexyphenidyl, and valproic acid were used concurrently with clozapine. Complete blood count monitoring was done every week for the first month, and then subsequently every two weeks for the following two months. Serum clozapine level could not be measured due to a lack of facilities. Of the 132 patients recruited, 52 patients were excluded during the 12 weeks period.

Clinical Assessment

Positive and Negative Syndrome Scale (PANSS), and the Clinical Global Impression Scale (CGIS) were used to assess for psychopathology [14,15].

Electroencephalography (EEG) Measures

A conventional 12-Channel EEG was recorded in an awakened state with electrode placement as per international 10-20 system, in an eyes-closed state for 30 minutes prior to starting clozapine, as well as at the end of the study period. Three minutes of hyperventilation as well as photic stimulation in different frequencies were also obtained. EEG was visually interpreted by an expert and trained electroencephalographer. The following parameters of EEG were studied: 1) an overall abnormal EEG as per visual impression of the electroencephalographer, and 2) slow wave and epileptogenic activities.

Primary Outcome Criteria was: 1) change in EEG abnormality, and 2) level of clinical response as per CGIS and PANSS changes in EEG patterns. Two sets of criteria were used for identifying the presence of EEG abnormality. Criteria 1 were the presence of slow and theta, θ activity; Criteria 2 was the presence of epileptiform activity (slow waves, sharp waves, or spikes) at end point. The presence of greater than 50% per minute recording of slow wave activity was considered abnormal. This was decided by opinion of the electrophysiologist based upon his experience. A composite value was also worked out representing a number of patients showing both the abnormalities. Primary outcome and good recovery was based on CGIS and PANSS total score. A CGIS score of less than 2, total PANSS reduction by more than 30%, and statistically significant reduction in mean scores of PANSS total from baseline to endpoint were considered as good outcomes.

Secondary Outcome Criteria

A secondary outcome criteria for positive and negative symptoms was considered. A score of 14 or below on Positive and negative symptoms score at the endpoint was

considered as good outcome. EEG abnormality and clinical endpoint differences from baseline to the end of the 12 weeks was evaluated using McNemar's chi-square tests for dichotomous measures, and paired t-tests for continuous measures. Chi-square tests were used to examine the association between EEG abnormalities at baseline and clinical outcomes at the end of the study.

Results

Sample characteristics are given in Table 1. The majority of patients were male (83% male, 17% female) with a mean age of 33

years and a mean illness duration of 2.5 years. A number of patients were taking other medications prior to taking clozapine; 1.3% were taking trifluoperazine, 42.5% risperidone, 52.5% olanzapine, 78.5% quetiapine, 35.0% aripiprazole, and 37.5% clopexole.

A significant number of patients (55%) had co-morbid axis I disorders, (16%) substance abuse, and 20% were never hospitalized. Overall, the subjects represented a severe form of the illness, and almost all patients were on more than one antipsychotic before switching to clozapine.

Table 1. Patient characteristics

N = 80		N = 80	
Characteristic	Frequency(%) Mean (SD)*	Hospitalizations	
Gender		Never	16 (20.3%)
Male	66 (82.5%)	Past - 1	29 (36.7%)
Female	14 (17.5%)	Past - 2	27 (34.2%)
Marriage – Married	33 (41.3%)	Past - 3	7 (8.9%)
Clinical Diagnosis		Substance Abuse	
Disorganized	18 (22.5%)	No substance abuse	51 (63.8%)
Paranoid	16 (20.0%)	Current	11 (13.8%)
Schizoaffective	16 (20.0%)	Cannabis	7 (8.8%)
Undifferentiated	18 (22.5%)	Alcohol	5 (6.3%)
Residual	12 (15.0%)	Poly-substance	6 (7.5%)
Age (Years)	33.4 (7.1)*	Comorbidities	
Duration of Illness (Months)	30.8 (8.5)*	Comorbidity – 3	
Age of Onset (Years)	30.7 (7.2)*	Comorbidity – Axis 1	44 (55.0%)
		Comorbidity – Axis 2	13 (16.3%)
Previous Medication Use			
Trifluoperazine	1 (1.3%)		
Risperidone	34(42.5%)		
Olanzapine	42 (52.5%)		
Quetiapine	63(78.5%)		
Aripiprazole	28(35.0%)		
Clopexole	30 (37.5%)		

EEG Changes

At baseline, both types of EEG abnormality were observed; slow wave and theta frequency in 34 (42%) patients, and epileptiform activity in 31 (38.8%) patients (Table 2). Both types of abnormalities showed significant worsening at

end point. Slow wave abnormality increased to 91.3% from 42% ($p < .001$), and epileptiform changes increased in 75% of patients from 38.8% ($p < 0.001$). The unusually high prevalence of slow wave abnormality seen in 91% of patients was potentially due to the physiological state during the EEG recording

(Table 2). Independently EEG abnormality as per both the criteria showed worsening from baseline to endpoint.

Table 2. EEG abnormalities at baseline and end point (McNemar's Chi-square test), N = 80

EEG Frequency		Baseline	End of Study (Week 12)	p-value
(1)	Slow & θ^* (≤ 7)	54 (67.5%)	77 (96.3%)	< 0.001
(2)	Sharp Waves/Spikes	31 (38.8%)	60 (75.0%)	< 0.001
(3)	Composite Abnormality Slow (>50) or Sharp waves	12 (15.0%)	33 (41.3%)	< 0.001

* θ = Theta

However, EEG abnormality as per any of the two criteria did not show significant correlation with response to clozapine.

Table 3. Clinical parameters at baseline and end of study

	Baseline	Week 12	Difference	p-value
CGIS				
>2 (Abnormal)	80 (100.0%)	32 (40.0%)	49.9% reduction	< 0.001
PANSS Total				
Mean (sd)	102.4 (13.3)	51.3 (10.3)	51.1 (18.8)	< 0.001
> 30% Reduction		6 (7.5%)		
Negative Symptoms			45.6% reduction	
Mean (sd)	26.5 (5.4)	12.1 (5.3)	14.4 (7.9)	< 0.001
>14 (Abnormal)	77 (96.3%)	21 (26.3%)	(70%)	
> 30% Reduction	22 (27.5%)	0 (0.0%)		
Positive Symptoms			54.7% reduction	
Mean (SD)	25.4 (3.9)	11.6 (4.8)	13.9 (5.8)	< 0.001
>14 (Abnormal)		22 (27.5%)		
> 30% Reduction	12 (15.0%)	0 (0.0%)		

(CGIS = Clinical Global Impression Scale; PANSS = Positive and Negative Syndrome Scale; SD = Standard deviation)

Psychopathological Measures

Following the 12-week treatment with clozapine, 48 (60%) patients showed significant improvement on CGIS (score less than or equal to 2, $p < .001$). There was a significant reduction from baseline to endpoint seen on the CGIS (5.1 vs. 1.5, $p < .001$), mean PANSS total score (102.4 vs. 51.3, $p < .001$), negative symptoms (26.5 vs. 12.1, $p < .001$), and positive symptoms (25.4 vs. 11.6, $p < .001$; Table 3). At end point, 74 (92.5%) patients showed improvement on PANSS scores, 45.6% in negative symptoms, and 54.7% in positive symptoms, as per reduction of more than 30% in scores. A reduction of greater

than 50% in total mean scores indicating clozapine was equally effective for treating both positive and negative symptoms.

Dosage

The mean clozapine dosage was 265 mg/day. The mean clozapine dose was not significantly correlated with the percent of slow wave activity at baseline ($r = -.10$, $p = .44$), but dose was positively correlated with the percent of slow wave activity at endpoint ($r = .27$, $p = .04$). Higher clozapine dose predicted a greater percentage of slow wave activity ($p < .001$) only after the 12 weeks of treatment (Table 4).

Table 4. Change in EEG abnormality between baseline and week 12 in relation to clinical parameters

	Baseline slow wave, θ		
	≤ 7 (Abnormal)	> 7 (Normal)	p-value
CGIS ≤ 2	34 (63.0%)	14 (53.9%)	0.436
NS ≤ 14	43 (79.6%)	16 (61.5%)	0.085
PS ≤ 14	39 (72.2%)	19 (73.1%)	0.936
	Epileptogenic Abnormality		
	Normal	Abnormal	
CGIS ≤ 2	13 (52.0%)	35 (63.6%)	0.325*
NS ≤ 14	15 (60.0%)	44 (80.0%)	0.060*
PS ≤ 14	18 (72.0%)	40 (72.7%)	0.946*
	Composite Criteria 1		
	Normal	Abnormal	
CGIS ≤ 2	38 (55.9%)	10 (83.3%)	0.110*
NS ≤ 14	49 (72.1%)	10 (83.3%)	0.502*
PS ≤ 14	49 (72.1%)	9 (75.0%)	0.999*

(Abnormality criteria: Slow Waves – theta, $\theta > 50$ per minute recording activity, sharp waves/spikes, epileptogenic activity = abundant. (*Fisher's Exact); NS = negative symptoms ; PS = positive symptoms.)

Discussion

The present study shows three main findings: firstly, the response rate of clozapine in treatment resistant schizophrenia is good compared to what has been generally reported. The investigators observed improvement (60%) on CGIS which appears consistent with previous Indian studies. Also, we have found that clozapine was equally effective in reducing both positive and negative symptoms. Secondly, EEG abnormalities were seen in a significantly high number of patients in both pre-treatment and post treatment phases of clozapine therapy. Lastly, none of the EEG changes found were correlated with clinical outcome parameters. However, there was a trend of significant correlation between a higher dosage of clozapine and a greater percentage of slow wave activity only after 12 weeks of treatment.

A previous study by Srivastava et al.,[16] evaluated the effectiveness of clozapine at a 3 year follow-up and reported a significant reduction in 85% of patients. Another study by Riswin et al.,[17] reported the usefulness of clozapine in 68 non-bipolar subjects. Three-fourths of them showed good clinical response following treatment. Similarly, Dutt et al.[18], evaluated the short term and long term effectiveness of clozapine in 51 subjects, predominantly those diagnosed with schizophrenia, and concluded that during the inpatient stay (mean duration 63 days), there

was a 34.7% reduction in total PANSS rating after starting clozapine at a mean dose of 298.97 mg/day. A recent Cochrane (2009) meta-analytical review of 52 clinical trials involving 4,746 patients determined that improvement was seen more frequently and relapse was less frequent amongst those taking clozapine[19]. In addition, the study showed that a quarter of patients remain with persisting symptoms, which is similar to this study's findings. Therefore, whatever short term benefits clozapine may have, these must outweigh the severity of adverse effects and much research is still needed regarding the efficacy of clozapine in increasing social and global functioning. Response to clozapine in general remains limited to 30-40% in subjects, despite adequate dose and duration of treatment. In this study, response to clozapine after 12 weeks appeared somewhat better as per CGIS and PANSS scores. This outcome is likely to be due to less chronic sample of patients, shorter mean duration of illness (30 months), and with a lesser incidence of cannabis use (9%), alcohol use (7%), less number of hospitalizations (>50% has 1 or less and 20% without hospitalization), and a later mean age of onset of psychosis (30.7 years) [20,21]. Consistent with previous research, EEG abnormalities were seen in patients who had a shorter duration of the illness and those who had a better response to clozapine, although these were not statistically significant. Although EEG changes seem to occur during therapeutic intervention with

clozapine, these changes do not necessarily lead to seizure activity or convulsions and could be dependent on dosage and duration. In a cross sectional study of 87 patients, Goyal et al.,[22] concluded that EEG abnormalities were observed in 63.2% of patients. Both slow wave and epileptiform activities were noted in 41.4% of patients. However, these EEG abnormalities were not associated with dose or duration of clozapine exposure. In another study, 37 patients demonstrated that pretreatment EEG can predict clozapine response [23]. It is undetermined why the presence of EEG abnormality was in such a high number of patients before starting clozapine (39% to 68%). The present study found that EEG abnormality increased in about 26% of patients between baseline and the 12 weeks of treatment. The presence of slow wave, theta activity and epileptogenic activity was present in 15% of patients at pre-treatment, and in 41.3% of patients at the end point, indicating a statistically significant increase. Post-treatment EEG abnormalities may not have been due to clozapine alone. It could be argued that such changes may also appear because of a combination of factors existing prior to introduction of clozapine. Such factors include pre-clozapine antipsychotics, particularly atypical antipsychotics[22], the presence of EEG abnormalities before the start of any antipsychotic, total antipsychotic exposure during pre-clozapine stage, EEG abnormality that did not normalize with antipsychotic treatment, or any other causes such as comorbid substance abuse[24]. There is a significant presence of EEG abnormality in individuals with schizophrenia in general[25], which makes these individuals highly vulnerable to seizure which is particularly prevalent in Indian subjects (up to 16-18%) [26].

Though independently all EEG parameters showed worsening after 12 weeks, none of these have been found to be significant in predicting a response to clozapine on clinical parameters. Research examining EEG as a predictor for clinical response has been an interesting area of research, but so far it has remained inconclusive. It is a sparsely studied area, particularly with conventional EEG measures. A dose –response and EEG

relationship shows that a mean dose was not correlated with slow wave changes at baseline, but it was positively correlated at the endpoint. Higher dose of clozapine was positively correlated with slow wave changes following 12 weeks of treatment.

The study shows that EEG abnormality is not correlated with current level of clozapine response. There is, however, a possibility of response with longer duration of treatment. EEG changes due to clozapine used for more than 12 weeks and their correlation with long term outcome of more than 12 weeks remains a matter of future research. A lack of association between EEG changes and clinical response might be attributed to less sophisticated power of conventional EEG, and uncertainty of actual EEG worsening at the end point due to high rates of pre-treatment EEG abnormality.

Conclusion

This study shows that clozapine is clinically effective in treatment resistant patients of first-episode schizophrenia following 12 weeks of treatment, with a response rate of 60% based on CGIS scores. The investigators found that 40% of patients had EEG abnormality before starting clozapine and EEG abnormality at the endpoint was seen in 75% of patients. None of the baseline or post-treatment EEG abnormalities predicted clinical response to clozapine, yet patients taking a higher dosage of clozapine did exhibit slow wave changes at endpoint.

Limitations

There are certain limitations in this study which prevent straight forward conclusions. This study was an open study and no comparative parameter is available. Secondly, the use of conventional EEG lacks the electrophysiological sophistication of newer EEG measures. A well-designed, prospective double blind study is required to ascertain the role of EEG abnormalities in predicting a clinical response.

Acknowledgments

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Disclosure Statements

The authors report no financial relationship with any company whose products are mentioned in this article or with manufacturers of competing products.

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Received: 14 July 2013

Accepted: 1 September 2013

ORIGINAL ARTICLE

**OUTCOMES ON PSYCHOSOCIAL FACTORS AND
NUTRITION-RELATED QUALITY OF LIFE:
EVALUATION OF A 10-WEEK NUTRITION EDUCATION
INTERVENTION IN UNIVERSITY STUDENTS**

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Abstract

Objective: The purpose of this study was to evaluate the effectiveness of nutrition education intervention among university students in terms of social, psychological factors and nutrition-related Quality of Life (NQoL) outcomes after receiving a 10-week nutrition education. Longitudinal and randomised study design was adopted for the study. **Methods:** A total of 417 respondents from four public universities in Terengganu were randomly assigned to either intervention group (IG = 205) or control group (CG = 212). The IG received nutrition education through three tools; 1) conventional lecture, 2) brochures and 3) text messages via short messaging system (SMS) while the CG not received any intervention. Students completed the Malay version of NQoL (6 domains; 49 items; Likert-type responses=1-5) and SF-36 (8 domains; 36 items) at pre-intervention and post-intervention. Data analysis was carried out by using SPSS 16.0 utilising descriptive and parametric statistics. **Results:** Ninety-one percent of participants (IG = 178; CG = 202) completed the study (age = 19.1±1.1 years; female = 87.6%; Malay = 98.2%). After controlling for possible confounders (eg. weight, waist, hip circumferences and pre-intervention scores for each domain), IG possessed relatively higher NQoL score in *Food Impact* ($p = 0.001$), *Social / Interpersonal* ($p = 0.008$), *Physical Functioning* ($p = 0.011$) and *Overall NQoL* ($p = 0.001$). However, *Psychological Factors* did not show any significant difference for both groups. **Conclusion:** Although the intervention did not generate significant impact in the psychological component over a period of 10 weeks, significant positive impacts in Social/Interpersonal aspects and NQoL were clearly shown. *ASEAN Journal of Psychiatry, Vol. 15 (1): January – June 2014: 39-53.*

Keywords: Nutrition Education, Quality of Life, Nutrition Lecture, Brochure, Text Messaging

Introduction

The psychological well-being of university students is a very crucial component in the training and development of future intellectuals. The more psychologically healthy the university students are, the more likely they will be productive and successful in their academics [1]. However, Barker and

Galambos (2007) [2] discovered that university students are at risk of unhealthy eating behaviors as a result of the pressures of independence and hurried lifestyles in university. Another study showed that university students also experience stress during university life that may negatively influence their diet and hence have a negative impact on their nutrition-related quality of life

(NQoL) [3]. In relation to this, the psychological consequences of stress could in turn affect eating habits as they tend to eat more as a way of coping with such stress, hence contributing to weight gain and obesity [4]. It is expected that what we eat will affect our quality of life (QoL) since our identification of self, social interactions and psychological well-being are usually influenced by our food intake [5]. The inclusion of NQoL as an outcome measure for health-related quality of life (HRQoL) in association with dietary habits has not been extensively studied among university students [6]. Interestingly, a recent review provides encouraging evidence that cognitive, behavioral and mindfulness based interventions were effective in reducing psychological problems compared to psycho-educational and arts-based interventions [7]. In spite of this, little is known on whether nutrition education based interventions could reduce the psychological problems among Malaysian university students.

Nutrition education is defined as any set of learning experience designed to facilitate voluntary adoption of eating and other nutrition-related behaviour conducive to health and well-being [8]. It is recognised as an important component in programmes and interventions related to health promotion and disease prevention and it was widely employed in various populations such as school children, adolescents, young adults, older adults, pregnant women, infants and young children [9-13]. It has been proven to be effective in improving nutrient intakes, general knowledge about food and nutrition, as well as psychosocial variables such as self-efficacy and self-esteem among these populations [14]. Although numerous nutrition education interventions have been implemented previously, relatively few efforts have been targeted among university students [6, 15]. However, several previous studies have shown that class-based nutrition education improved fruits and vegetables consumption among university students [16]. Similarly, class-based nutrition education has been used to enhance nutritional knowledge among university students with the goal to decrease soft drinks and to increase milk and milk products consumption [11].

The most recent version of the Malaysian Dietary Guidelines (MDG) 2010 was launched on 25th March 2010 with the newly modified edition consisting of 14 key messages to replace the first version published in 1999 [17]. A variety of media channels have been used to disseminate information from the previous version of MDG to the public such as roadshows, exhibitions, leaflets and websites. However, a study conducted by Norimah and co-members (2010) [18] unfortunately showed that about 63% of the respondents from 773 adults (aged between 18 to 59 years) were not even aware of its existence although the previous guideline was published 10 years ago. Thus, a study by Tee (2011) [19] suggested that there should be other innovative ways to disseminate the current MDG 2010 through new media channels/ technologies such as usage of SMS in the future.

Text messaging, otherwise known as short message service (SMS), has become an important modality for mobile communication. Text messaging consists of the nearly immediate delivery of synchronous short messages (160 characters maximum). An estimated 2.25 trillion text messages were sent in 2011, an increase from 1.68 billion in 2006, showing remarkable growth in wireless communication [20]. Text messaging is a widely accessible, relatively inexpensive tool for health behavior change and numerous studies proved that text messaging have positive short-term behavioral outcomes [21-22]. Besides that, young people are fast adopters of new technologies and the largest users of text messaging making it one of the best choices as means of intervention delivery. Mobile interventions have the ability to interact with the individual with much greater frequency and in the context of the behaviour compared to internet interventions delivered to computers [23]. Text messaging also might be useful as a reinforcement tool for nutrition education along with other conventional methods such as delivering through classes and brochures in a multimodal intervention setting.

Thus, the purpose of this study was to evaluate the effectiveness of a 10-week nutrition education intervention among university

students in improving social, psychological and NQoL outcomes.

Methods

This longitudinal study was carried out in four public universities in Terengganu, Malaysia starting September 2011 until February 2012. The lists of all available classes (also called as clusters) were gathered from the heads of department of each university. From these lists, a total of 16 classes were selected randomly using simple random sampling to represent the target population of this study. All the randomly selected clusters were then randomised into intervention group (IG) and control group (CG) by drawing sealed

envelopes containing group assignment. Included participants were Malaysian university students aged between 18 to 24 years; actively using a mobile telephone; in first or second year diploma / degree of management studies; generally healthy and able to read, write, speak and understand Malay or English language. Respondents were excluded if their age was below or above the stated age (< 18 years or > 24 years); did not have mobile phones; were in the final year and in other studies; have been diagnosed with any diseases and were unable to read, write, speak or understand Malay or English. At the end of this study, 417 university students agreed to participate (IG = 205, CG = 212). However, only 380 students completed the entire study (IG = 178, CG = 202) (Figure 1).

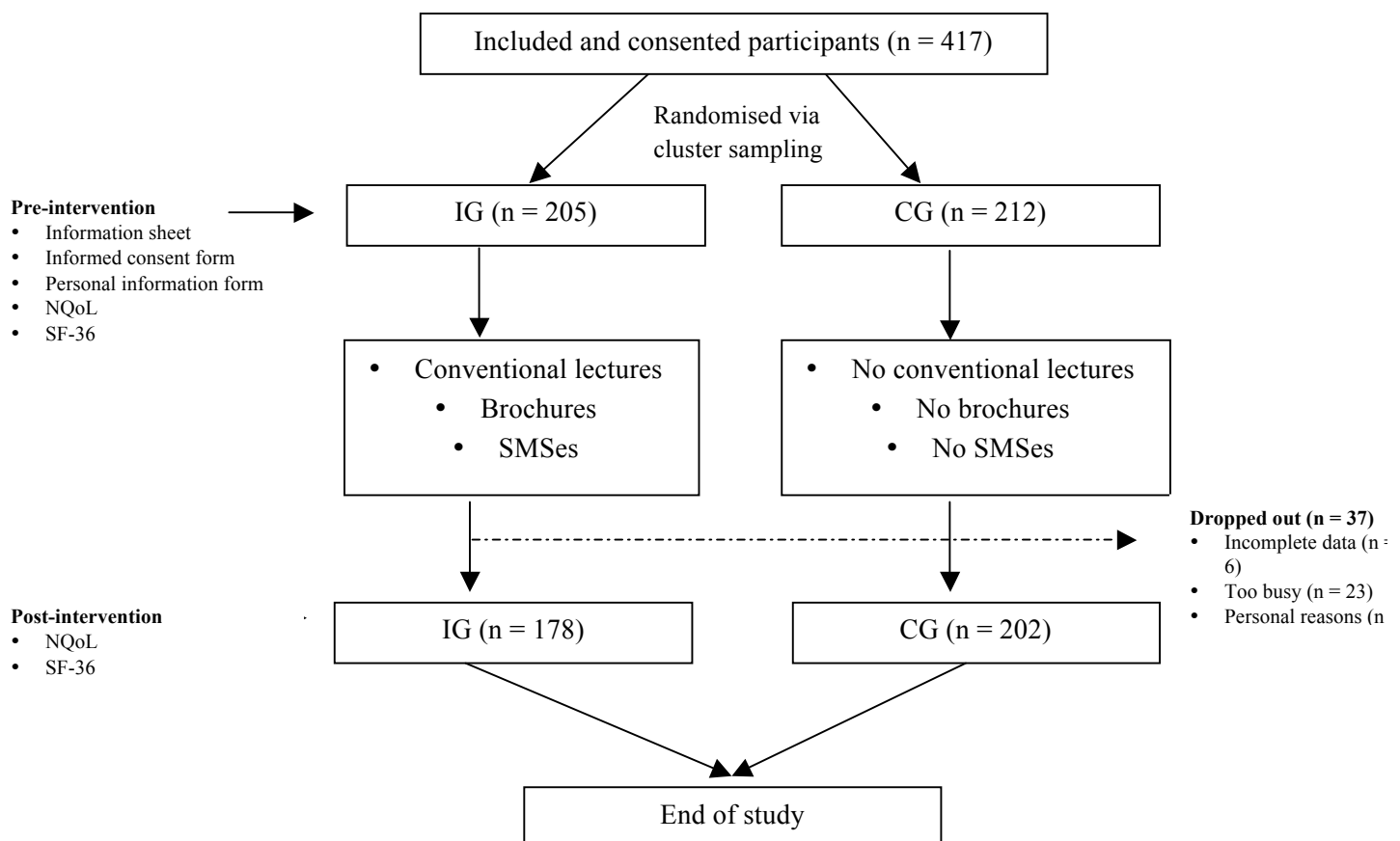


Figure 1: Flowchart of respondent's recruitment

Description of Intervention

The nutrition education intervention employed was based on the latest MDG 2010 which comprised 13 out of 14 nutrition topics (Table

1). Messages which deliberated on the *Practise Exclusive Breastfeeding from Birth until Six Months and Continue to Breastfeed until Two Years of Age* were excluded due to their irrelevance to the current participants

who were undergraduates and who were mostly unmarried. The rest of the messages were divided into three different modules; 1) Always be healthy (3 messages), 2) Eat moderately (5 messages) and 3) Live for the future (5 messages).

All included messages were delivered through three modes; 1) conventional lecture, 2) brochures and 3) text messages via SMS which were provided for IG only within 10 weeks after recruitment. Conventional lecture was carried out in which all key messages in the guidelines were compiled into a 64-slide multimedia Microsoft PowerPoint presentation. The slides used were clearly visible for approximately 100 students with appropriate font sizes. Attractive graphics and suitable combination of colors were additionally used to stimulate their interest on the topics delivered. Brochures were designed to enhance their understanding and memory after the lecture, containing *Key*

Recommendations and *How to Achieve* the recommendations for each message with three different modules. Three brochures were developed, each representing the same three modules as presented in the conventional lecture. The information was displayed on coloured art papers (size 35.8 cm x 25 cm) in four-folded format as well as double-sided printed. Pictorial graphics which includes food pictures, cartoon pictures and symbols were used to attract the readers. The text language was kept simple with black 12-sized font. Text messages via SMS were sent manually through the *Mobile Nutritional Education System (MNES)* which was developed by Mobile Content and Services Provider based in Kuala Lumpur, Malaysia. Text messages can be delivered through all types of cellular telephone with a limitation of 152 characters for each thirteen messages. As the national language, Malay language was used in all the lecture, brochures and SMSes and abbreviations were avoided to prevent misunderstanding of the information received.

Table 1. The modules and key messages incorporated in the nutrition education module

Modules	Messages
1) Always be healthy	- Eat a variety of foods within your recommended intake - Maintain body weight in a healthy range - Be physically active everyday
2) Eat moderately	- Eat adequate amount of rice, other cereal products (preferably whole grain) and tubers - Eat plenty of fruits and vegetables everyday - Consume moderate amounts of fish, meat, poultry, egg, legumes and nuts - Consume adequate amounts of milk and milk products - Drink plenty of water daily
3) Live the future	- Limit intake of foods high in fats and minimise fats and oils in food preparation - Choose and prepare foods with less salt and sauces - Consume foods and beverages low in sugar - Consume safe and clean foods and beverages - Make effective use of nutrition information on food labels

Content validity and face validity of these three modes were initially evaluated by two qualified researchers experienced in nutrition and dietetics and were then pre-tested among 116 university students for clarity and readability as well as the overall content of intervention [24]. Subsequently, the contents in these three modes were modified based on the inputs and feedbacks obtained from

respondents recruited during the pre-test. Throughout the pre-testing of intervention, majority of them (91.3%) rated the slides as comprehensible, ranked the presentation as “interesting” (73.2%) while, 64.7% of them ranked the information included as adequate. Other than that, the brochures were considered to be at least “good” with regard to its pictorial graphics (85.3%) and languages

(81.9%). Most of the students were also generally contented with the information given through the SMS (86.2%). Overall, 94.0% of the students believed that nutrition education delivery through a variety of methods can enhance their awareness and knowledge.

Outcome Measurements

Short Form 36 health survey (SF-36) instrument [25]

This instrument was one of the most extensively used instruments in health care, having been widely translated and tested worldwide. The SF-36 was a multi-purpose, short form health survey containing 36 questions. It generated an eight-scale profile of scores; *Physical Functioning* (10 items), *Role-Physical* (4 items), *Bodily-Pain* (2 items), *General-Health* (5 items), *Vitality* (4 items), *Social-Functioning* (2 items), *Role-Emotional* (3 items) and *Mental-Health* (5 items). An additional item examined changes in health status compared to one year ago. The Malay translated version of SF-36 health survey questionnaire was administered at the pre- and post test measures for both IG and CG. Each domain was scored independently from 0 (lowest level of function) to 100 (highest level of the function). Higher scores on each scale signified a better health state. The developers have also methodically documented the validity and reliability of this instrument in other countries [26-27]. The Malay translated version of SF-36 has also been tested for their psychometric properties among the general population in Malaysia which consequently contributed to its generally acceptable internal consistency and validity [28].

Nutrition Quality of Life (NQoL) instrument

Nutrition-related QoL was measured via the Malay version of NQoL instrument, which consisted of 49 items (1 item deleted due to its irrelevance for this population – “my food-related condition has caused problems with sexual relations”). This Malay translated version was produced based on the English NQoL Survey version 1.4 [29] which was developed as a tool to monitor the impact of medical nutrition therapy (MNT), a nutrition-based treatment that involves selecting the appropriate food. The original questionnaire of NQoL was initially forward translated into

Malay and later back translated into English. This instrument assesses six domains i.e. *Food Impact* (9 items), *Self-Image* (6 items), *Psychological Factors* (10 items), *Social / Interpersonal Factors* (6 items), *Physical Functioning* (9 items) and *Self-Efficacy* (9 items). Examples of the items for each domain were; *I ate enough food to be satisfied* (*Food Impact*); *Liked the way I look* (*Self-Image*); *Rewarded myself with food* (*Psychological Factors*); *My family/ friends have nagged me about food I ate* (*Social / Interpersonal Factors*); *Walking at a moderate pace for 30 minutes* (*Physical Functioning*) and *Knew what type of food I should have been eating for my healthy lifestyle* (*Self-Efficacy*). For each item, the responses were based on five-point Likert-type scales whereby; 5 = all of the time, 4 = most of the time, 3 = some of the time, 2 = a little of the time and 1 = none of the time. The *Overall NQoL* was derived from the total mean of all the six domains. The frame of reference for all questions was the preceding two weeks. Scores for 27 out of 49 items were transposed so that higher scores indicated better NQoL. Only for one domain i.e. *Self-Efficacy* the scores were not transposed as all the questions were already positively-worded. Since this was a newly-developed questionnaire and has not yet been tested among the current population, an established generic instrument of SF-36 has thus been used as a reference. For the current study, the internal consistency reliability (Cronbach's α) and Pearson's rank correlation coefficient (convergent validity and divergent validity) were utilised respectively for the purpose of reliability and validity tests. Most domains of the Malay NQoL and SF-36 exhibited between moderate to excellent internal consistencies (0.437 - 0.874; 0.504 - 0.813 respectively) which indicated that both instruments possessed acceptable internal consistency reliability. This can be seen in *Self-Image*, *Self-Efficacy*, *Physical Functioning* and *Overall NQoL* while for SF-36, it can be seen in all domains except for *Bodily-Pain* and *Social Functioning*. The evidence of convergent validity was shown by the significant correlations between all NQoL domains and *Overall NQoL* ($r_s = 0.272-0.561$; $p < 0.05$). Most of the domains in SF-36 correlate weakly with *Overall NQoL*, confirming that these generic and specific

instruments measured distinct HRQoL constructs.

Procedures

The NQoL and SF-36 questionnaires were co-administered to the IG and CG before and after the nutrition education intervention. The participants were informed verbally and via the 'Information Sheet' about the purpose of this study and their written consents were obtained prior to data collection. All included participants were met either in their lecture rooms or in lecture halls. The research assistant (RA) was available to assist them during the data collection. Throughout these 10 weeks, the IG received nutrition education in three modes: 1) conventional lecture, 2) brochures and 3) SMS. Participants in IG underwent a second slot of 1.5-hour nutrition lecture a week after baseline by the RA who possessed basic knowledge in food and nutrition. This lecture was conducted after the appointment dates were set according to the time and place agreed with the class representatives. The brochures were distributed once the lecture was completed. After that, all of them received thirteen reminder SMSes (once for every 5 days) through our MNES. During the intervention period, respondents from CG did not receive any classes, brochures or SMSes and were instructed to maintain their normal daily activity. All respondents were thanked for their contribution and help rendered during this study.

Ethical Approval

Ethical approval was granted by the Institute of Health Behavioral Research (IHBR), Clinical Research Centre (CRC) and Ministry of Health Research and Ethics Committee (MREC), Malaysia. Apart from that, permission to conduct the study in each participating university was also obtained from the vice chancellors and heads of department prior to the data collection process. Permission to use the latest MDG 2010 was also approved by Nutrition Division, Ministry of Health Malaysia.

Data Analysis

Initial normality test was carried out utilizing the age and the mean scores of *Overall NQoL* domain as dependent variables. The overall outcomes complied with normality requirements in which the Kolmogorov-Smirnov statistics emerged as $p > 0.05$. The IG and CG were compared descriptively with respect to socio-demographic characteristics. All data analyses were performed using SPSS for Windows version 16.0. Analysis of covariance (ANCOVA) was utilised to examine the changes in NQoL and SF-36 scores from pre- to post-intervention between IG and CG with potentially confounding factors (weight, waist, hip and pre-intervention scores) included as covariates. Adjusted effect sizes using Cohen's interpretation were also added (adjusted mean difference $\div \sqrt{\text{mean square error}}$). The values of adjusted effect sizes between 0.20 to 0.49 were considered as "small" effect, 0.50 to 0.79 as "medium" effect while a "large" effect was indicated if the values were greater than 0.80 [30]. Significance was set a priori at $p < 0.05$.

Results

Demographic characteristics

Overall, there were 417 randomly-selected respondents who met the inclusion criteria and were then randomised to either IG ($n=205$) or CG ($n = 212$). Of these, 380 undergraduates completed the study (91.1% response rate), 178 and 202 were in IG and CG respectively. Another thirty-seven respondents (8.9%) were dropped for uncompleted data ($n = 6$) refusing participation because they were too busy with their studies, examinations and curriculum activities ($n = 23$) and some stated "personal reasons" ($n = 8$). The average age of the respondents was 19.1 years (range = 18-24) and height was 157.2 cm. For both groups, most were females; were living with friends, who studied in the first year and their studies were funded either by the National Higher Education Fund Corporation (*Perbadanan Tabung Pendidikan Tinggi Nasional / PTPTN*) or *Majlis Amanah Rakyat (MARA)*. Less than 50% of the respondents consumed breakfast three times a week for both groups. Bed-time was between 12:00 midnight to 2:00 am and

total sleeping hours were 6 to 8 hours per day among most of them in both IG and CG (Table 2).

NQoL assessment

The pre-intervention and post-intervention of unadjusted mean scores for NQoL between IG and CG are presented in the Table 3. In NQoL

domains, improvements were found in IG for *Food Impact*, *Self-Image*, *Physical Functioning*, *Self-Efficacy* and *Overall NQoL* between pre-intervention and post-intervention. On the other hand, after 10 weeks of nutrition education intervention, the mean scores of most NQoL domains (*Food Impact*, *Self-Image*, *Psychological Factors*, *Self-Efficacy* and *Overall NQoL*) remained almost constant in the CG.

Table 2. Demographic and background variables of the respondents

Variable	CG (n=202)	IG (n=178)
Age (year)*	19.2 ± 1.1	19.0 ± 1.2
Height (cm)*	157.8 ± 7.2	156.5 ± 7.1
Weight (kg)*	53.6 ± 12.3	51.9 ± 9.5
Waist circumference (cm)*	68.8 ± 11.2	67.6 ± 9.9
Hip circumference (cm)*	90.0 ± 10.2	89.9 ± 9.6
Gender^a		
Male	35 (17.3)	12 (6.7)
Female	167 (82.7)	166 (93.3)
Living arrangement^a		
Alone	2 (1.0)	9 (5.1)
With family	17 (8.4)	27 (15.2)
With friends	183 (90.6)	142 (79.8)
Academic year^a		
First year	129 (63.9)	114 (64.0)
Second year	73 (36.1)	64 (36.0)
Funding status^a		
Funded	149 (73.8)	130 (73.0)
Not funded	52 (25.7)	48 (27.0)
Breakfast habit^a		
Everyday	54 (26.7)	54 (30.3)
3 times a week	91 (45.0)	80 (44.9)
5 times a week	23 (11.4)	14 (7.9)
Never	34 (16.8)	30 (16.9)
Bed time^a		
Before 12:00 midnight	28 (13.9)	17 (9.6)
12:00 midnight – 2:00 am	135 (66.8)	137 (77.0)
After 2:00 am	39 (19.3)	24 (13.5)
Sleeping hours (/day) ^a		
< 6 hours	67 (33.2)	70 (39.3)
6 – 8 hours	131 (64.9)	106 (59.6)
> 8 hours	4 (2.0)	2 (1.1)

*Data expressed as mean ± SD;

^aData expressed as n (%)

The results of ANCOVA for NQoL scores from pre- to post-intervention between IG and CG were also demonstrated in Table 3. Among the NQoL domains, IG reported significantly higher NQoL compared to CG particularly in *Food Impact* ($p = 0.001$), *Social*

/ Interpersonal ($p = 0.008$), *Physical Functioning* ($p = 0.011$) and *Overall NQoL* ($p = 0.001$) after controlling for potential confounders such as weight, waist circumference, hip circumference and pre-intervention mean for each domain. There

were no significant differences found in *Self-Image*, *Psychological Factors* and *Self-Efficacy* for both groups. The *Overall NQoL* has the relatively largest adjusted effect size (0.44) which was nonetheless still considered as a small change based on Cohen's interpretation (Table 3).

HRQoL assessment

Table 3 also shows the pre- and post-intervention unadjusted mean scores for HRQoL domains between IG and CG. Scores at pre-intervention were comparable between IG and CG. At post-intervention, respondents

in IG expressed improvements in HRQoL domains except for *Mental Health* and *Vitality*. Similarly, respondents in CG also showed increments in most HRQoL domains except for *Physical Functioning* and *Vitality*. However, the mean differences between pre and post-intervention in majority of HRQoL domains did not differ to a large extent in both IG and CG.

After controlling for the possible confounders, there were no significant differences in all HRQoL domains over-time between IG and CG ($p > 0.05$). The adjusted effect sizes for all HRQoL subscales ranged from negligible to small (0.01 to 0.11) (Table 3).

Table 3. ANCOVA analysis between two groups after controlling potential confounders.								
Variables	Mean ± SD		Adj. mean (95% CI) ^a	Adj. mean diff. (95% CI) ^b	F-stat (df)	p value ^a	Adjusted effect size (Cohen's d)	
	Pre-intervention	Post-intervention						
<i>Malay NQoL</i>								
<i>Food Impact</i> Control Group Intervention Group	3.2 ± 0.3 3.2 ± 0.5	3.2 ± 0.3 3.3 ± 0.4	3.2 (3.1, 3.2) 3.3 (3.3, 3.4)	0.1 (0.1, 0.2)	16.3 (1, 374)	0.001	0.42 (S)	
<i>Self-Image</i> Control Group Intervention Group	3.3 ± 0.5 3.3 ± 0.5	3.3 ± 0.5 3.4 ± 0.5	3.3 (3.3, 3.4) 3.4 (3.3, 3.4)	0.0 (-0.1, 0.1)	0.1 (1, 373)	0.717	0.04 (N)	
<i>Psychological Factors</i> Control Group Intervention Group	3.4 ± 0.4 3.4 ± 0.4	3.4 ± 0.4 3.4 ± 0.4	3.3 (3.3, 3.4) 3.4 (3.3, 3.5)	0.1 (-0.0, 0.1)	2.2 (1, 374)	0.143	0.15 (N)	
<i>Social / Interpersonal</i> Control Group Intervention Group	3.8 ± 0.3 3.8 ± 0.4	3.6 ± 0.4 3.8 ± 0.4	3.6 (3.6, 3.7) 3.8 (3.7, 3.8)	0.1 (0.0, 0.2)	7.0 (1, 374)	0.008	0.28 (S)	
<i>Physical Functioning</i> Control Group Intervention Group	3.1 ± 0.9 3.1 ± 0.9	3.0 ± 0.9 3.2 ± 0.8	3.0 (2.9, 3.1) 3.2 (3.1, 3.3)	0.2 (0.1, 0.4)	6.5 (1, 374)	0.011	0.26 (S)	
<i>Self-Efficacy</i> Control Group Intervention Group	3.4 ± 0.6 3.4 ± 0.7	3.4 ± 0.7 3.5 ± 0.6	3.4 (3.4, 3.5) 3.5 (3.4, 3.6)	0.1 (-0.0, 0.2)	1.3 (1, 374)	0.254	0.12 (N)	
<i>Overall NQoL</i> Control Group Intervention Group	3.4 ± 0.2 3.3 ± 0.3	3.4 ± 0.3 3.4 ± 0.3	3.3 (3.3, 3.4) 3.4 (3.4, 3.5)	0.1 (0.1, 0.2)	17.9 (1, 374)	0.001	0.44 (S)	
<i>SF-36</i>								
<i>Physical Functioning</i> Control Group Intervention Group	93.5 ± 19.1 89.4 ± 13.3	92.1 ± 12.7 92.2 ± 14.4	91.5 (89.7, 93.3) 92.8 (90.9, 94.7)	1.3 (-1.3, 3.9)	0.3 (1, 374)	0.326	0.10 (N)	
<i>Role-Physical</i> Control Group Intervention Group	90.3 ± 29.8 90.7 ± 21.8	93.4 ± 26.9 93.8 ± 26.8	93.5 (89.8, 97.2) 93.7 (89.7, 97.7)	0.2 (-5.3, 5.7)	0.0 (1, 373)	0.941	0.01 (N)	

<i>Bodily Pain</i> Control Group	77.9 ± 16.6	78.9 ± 16.9	86.4 (79.5, 93.3)	-4.1 (-14.3, 6.0)	0.6 (1, 374)	0.423	0.08 (N)
<i>General Health</i> Intervention Group	78.9 ± 82.6	82.6 ± 15.5	82.2 (74.9, 89.6)				
<i>General Health</i> Control Group	66.5 ± 16.3	70.9 ± 33.0	71.2 (67.4, 74.9)	-1.7 (-7.2, 3.9)	0.3 (1, 374)	0.558	0.06 (N)
<i>Vitality</i> Intervention Group	67.6 ± 24.3	65.8 ± 16.0	65.8 (63.8, 67.9)				
<i>Vitality</i> Control Group	66.9 ± 18.3	64.7 ± 17.1	64.7 (62.5, 66.9)	-1.2 (-4.2, 1.9)	0.6 (1, 374)	0.453	0.08 (N)
<i>Social Functioning</i> Control Group	82.4 ± 36.6	87.1 ± 36.0	87.1 (83.1, 91.1)	-2.6 (-8.4, 3.3)	0.8 (1, 374)	0.386	0.09 (N)
<i>Social Functioning</i> Intervention Group	79.3 ± 17.5	84.6 ± 17.0	84.5 (80.3, 88.8)				
<i>Role-Emotion</i> Control Group	73.9 ± 36.2	79.2 ± 41.6	79.4 (74.1, 84.6)	-2.0 (-9.8, 5.8)	0.3 (1, 374)	0.615	0.05 (N)
<i>Role-Emotion</i> Intervention Group	72.8 ± 37.5	77.5 ± 36.6	77.4 (71.7, 83.0)				
<i>Mental Health</i> Control Group	67.1 ± 14.9	68.9 ± 15.5	69.4 (67.3, 71.5)	-1.6 (-4.7, 1.5)	1.1 (1, 374)	0.298	0.11 (N)
<i>Mental Health</i> Intervention Group	68.6 ± 17.4	68.3 ± 18.9	67.7 (65.5, 70.0)				

^a Adjusted mean using ANCOVA after controlling for weight, waist, hip and pre-intervention for each variable

^b Bonferroni adjustment for 95%CI for difference

Adjusted effect size (N = Negligible, S = Small); SD = Standard deviation; Score range: NQoL (1-5); : SF-36 (0-10)

Discussion

The present investigation assessed the effectiveness of a 10-week nutrition education intervention which contained MDG 2010 as intervention and delivered through three tools (conventional lecture, brochures and SMSes) in terms of NQoL and HRQoL outcomes. Overall, this research has provided evidence on the benefits of MDG 2010 as a nutrition education tool for better dietary outcomes among Malaysian university students [31]. Although it takes time and effort to make healthy eating become part of a daily routine among university students, it is still important to educate them about healthy eating patterns when they are young in order to diminish the high risk of chronic diseases in later life [32].

At the completion of nutrition education intervention, results have significantly reflect positive changes notably among IG in NQoL subcomponent scores; *Food Impact, Social / Interpersonal, Physical Functioning* and *Overall NQoL*. These enhancements were statistically significant compared to CG. The NQoL's *Food Impact* domain emphasised on the impact of food or nutrition on a person's physical, mental (mind) and social well-being in which better scores for dietary practices can improve their QoL. Previous studies have suggested that a loss of control during eating was central to lower QoL which were indicated in the samples of adolescents and women with type II diabetes [33-34]. Results showed no significant difference in *Self-Efficacy* for both groups. As the intervention in this study was carried out over merely 10 weeks, it is rather difficult to show any significant effects on the development of one's *Self-Efficacy* since longer period is usually required for alteration of this aspect [35-36]. However, relatively higher outcomes among IG compared to CG were generated at the end of intervention. The *Self-Efficacy* questions measured how confident the respondents were in their choice of the amount of healthy food. However, it is assumed that respondents in the IG were exposed to health information from the MDG 2010 and this has increased their confidence level to choose more healthy food with the right amount. A previous study investigating the effectiveness of a 4-month intervention using stage-based newsletters,

computer-based communication, and motivational interviewing conducted by Richards et al., (2006) [15] also reported that in measuring *Self-Efficacy*, both fruits and vegetables intake were significantly greater in IG than CG at the completion of intervention among college students. Another study demonstrated that HRQoL among forty-seven free-living elderly people improved after completing nutrition education programme which consisted of issues related to healthy eating, prevention and diet therapy of obesity, diabetes, cardiovascular disease and osteoporosis [37]. Based on the findings of both the current and previous studies, it could be confirmed that nutrition education intervention has positive impacts in improving QoL.

Even though our programme did not include performing physical activities, the reported *Physical Functioning* among respondents in IG improved compared to CG. It could be that the information from MDG 2010 itself has provided a lot of benefits to them with specific information on how to be physically active daily. Encouragingly, a previous study among Korean female college students showed that nutrition education coupled with physical exercise significantly decreased body weight and body fat as well as significantly increased HRQoL in terms of *Physical Functioning, Vitality* and *General Health* [38]. The variety type of tools employed in delivering such nutrition education (i.e. conventional lecture, brochures and SMS) could have been appealing and beneficial as well as contributing to the positive outcomes in NQoL status especially in IG. Previous investigations have confirmed that providing class-based nutrition intervention in other population such as children imposed positive effects on nutrition knowledge, attitude, practice and students' choices of food among primary school children and high school teenagers [32, 39]. Providing SMSes (one SMS in five days) as reminders to IG may also be an effective reinforcement approach that can potentially change their NQoL. A review conducted by Fjeldsoe, Marshall and Miller (2009) [40] contended that weekly SMS-delivered interventions have positive short-term behavioural outcomes among healthy adults,

patients with bulimia nervosa, diabetic patients and hypertension.

The results of this research had also indicated that there was a significant increment in *Social Functioning* domain of NQoL for IG compared to CG. Culturally, family and relatives played a fundamental role in people's lives and Malaysians would not generally consider using health problems to evade social, let alone family gathering, which might be a factor of increased of social functioning domain [29]. Interestingly, our study found that *Psychological Factors* did not exhibit significant differences in comparison with previous study [4], which somehow seemed to suggest that *Psychological Factors* were not important outcomes of eating habits despite the administration of nutrition education intervention among this intervention cohort. Having a high BMI could produce distress particularly among women [41]. However, our additional analysis (not specifically shown in the results) demonstrated that our respondents were in the normal-weight range, indicating that their current weight status had little or no influence on their emotion or stress. The reasons for this phenomenon is not clear here but attending university or college could usually be a stressful experience for many college students, of which these psychological or emotional stressors became crucial to the development of obesity [42]. The lack of significant differences in all HRQoL components could be due to the intervention which was more focused on nutrition per se, hence specifically improving QoL related to nutrition rather than the psychological components of the sample.

Limitations of the study included the short length (10 weeks) of the intervention and not targeting the food intakes and physical activities which were important determinants of behavioral changes in NQoL. Whether the positive effects of QoL outcomes would persist or being attenuated in the long run was beyond the scope of this study. Thus, future research should be directed towards longitudinal studies to examine the long-term effect of nutrition education intervention on the outcomes of NQoL. In addition, the actual food intakes of university students in the current cohort should be assessed since this

study was rather focused on the nutrition-related QoL and the intervention itself emphasised heavily on nutrition. The sample of respondents was also rather unbalanced between genders due to difficulty in recruiting males compared to females, a common trend in the universities in Malaysia and the same trend is believed to have also occurred elsewhere [43-44]. Furthermore, the percentage of drop out was quite high among males compared to female respondents (male = 16.1%; female = 7.8%). Anyhow, the strength of our study included the use of reliable and validated questionnaires as well as the inclusion of large samples to substantiate the findings. Yet, this nutrition education intervention should be planned differently for students of other critical courses such as medical and nursing students who generally possess a comparatively high prevalence of psychological problems such as depression and stress [1].

Conclusions

In spite of the indifferent psychological outcomes, our present study still managed to exhibit that the nutrition education intervention conducted over a period of 10 weeks has a positive impact on social and NQoL elements among university undergraduates. The implementation period of the intervention, its contents and delivery modes might have been the critical factors contributing towards the outcomes of the intervention. This represented a practical and inexpensive way which has the potential not only to improve the NQoL for the youths, but for their future generation as well.

Acknowledgements

The authors would like to thank the Director General of Health, Malaysia, Institute for Health Behavioral Research (IHBR), Clinical Research Centre (CRC) and the MOH Research and Ethics Committee (MREC) for their approvals of our research. We would also like to thank Alias Daud, Aziz Deraman, Shamsul Nahar Abdullah, Ahmad Shukri Yazid, Wan Dorishah Wan Abdul Manan, Mohd Shaladdin Muda, Zaharah Dzulkifli, Nurafida Abdul Talib, Roseziahani Abdul Ghani, Mimi Zazira Hashim and all first year

and second year students from the Faculty of Business Management and Accountancy, Universiti Sultan Zainal Abidin, Faculty of Economy and Management, Universiti Malaysia Terengganu, Faculty of Office Management and Technology, Universiti Teknologi Mara (Kuala Terengganu and Dungun branches). We are also grateful to Noor Salihah Zakaria and Nor Shahirah Mansor for their kind assistance in data collection. Last but not least to the Technical Working Group of National Coordinating Committee on Food and Nutrition, Ministry of Health, Malaysia for their permission to use MDG 2010 in this study. This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors.

Declaration of conflicting interests

The authors have no conflict of interest or relevant financial relationships in this study.

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Received: 15 June 2013

Accepted: 1 September 2013

ORIGINAL ARTICLE

**VALIDATION OF THE MALAY-TRANSLATED VERSION
OF THE CENTER FOR EPIDEMIOLOGICAL STUDY –
DEPRESSION SCALE (CES-D)**

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Abstract

Objective: This study aims to establish the validity and reliability of the Malay-translated version of the CES-D. **Methods:** This study employed a cross-sectional study design. The participants were female inmates (n=90) from local prisons which were selected based on purposive-selective sampling. The analyses include face validation, factor analysis, and reliability testing. A test-retest was conducted within a one-week interval. **Results:** The mean score for depression among the participants is 18.97 (*SD*=6.51). Further descriptive analysis showed that 58.9% of them scored above the mean score, which is considered high. Preliminary construct validation analysis confirmed that factor analysis was appropriate for the Malay-translated version of the CES-D. Furthermore, the factor analysis showed similar factor loadings to the original English version. The total internal consistency of the translated version, which was measured by Cronbach's alpha coefficient, was equal to 0.75. The test-retest reliability of the total score, measured by Pearson's correlation was equal to 0.69. **Conclusions:** Face validity, construct validity, and reliability analysis were found satisfactory for the Malay-translated version of the CES-D. The Malay-translated version of the CES-D was found valid and reliable to be used in future studies, with comparable properties to the original version and to previous studies. *ASEAN Journal of Psychiatry, Vol. 15 (1): January – June 2014: 54-65.*

Keywords: Depression, Female Inmates, CES-D, Validation, Reliability

Introduction

Depression is one of the most prevalent mental health problems worldwide [1]. It affects anyone regardless of gender, age or background. In prison settings, the prevalence of depression is often higher than the general population [2], especially among females [3]. The prolonged effects of depression are notable and these have often been observed in prison setting. The severe effects of prolonged depression include self-harm, self-mutilation, and suicide [4,5]. Therefore, early detection of depressive symptoms is crucial to enable consecutive measures. For this purpose, use of a reliable psychometric instrument to assess depression is very important for accurate

screening of the problems. Consequently, proper diagnosis and treatment of depression could be applied. Appropriate and early treatment is very crucial in cases of prolonged depression in order to prevent unwanted consequences [1,4,5].

The original English version of the Center of Epidemiological Study – Depression scale (CES-D) was designed by Radloff (1977) as a screening instrument intended to measure common symptoms of depression [6]. The items in the instrument enquire certain depressive symptoms, such as poor appetite, sleep disturbance, and loss of concentration. Originally, it was designed for use in the general population [7], with estimated internal

consistency using Cronbach's alpha coefficient equal to .85 for the healthy general population, and .90 among a studied psychiatric population [6]. The original English version of the CES-D contains 20 items using a 4-point Likert-scale in accordance to the frequency of depressive symptoms (0 = rarely or none of the time, to 3 = most or all the time).

The CES-D has been used widely in many studies and has been translated and validated in many languages including Arabic [8], Greek [9], Korean [10], Portuguese [11], Brazilian Portuguese [12,13], Spanish [14], and French [15]. However, no published study on the Malay-translated version of the CES-D was found. So far, Malaysia has no local published psychometric instrument specifically to measure depression and thus, local researchers still use instruments originally developed in other languages. In addition, many previous studies [8,9,10,12,14] across different cultures show distinct factorial structures of the CES-D that are unique to the cultures. The effect of cultural differences on the factorial structures of the CES-D necessitates the availability of the CES-D in the native language of the assessed population. It also emphasizes the needs to explore the underlying construct of the instrument among the assessed population itself [16]. Since the national language of the country is Malay, it requires the CES-D to be translated into Malay and validated. The accurate outcome of the current study is very important to help identify possible depression among Malaysians in any future study.

The main objective of the current study is to validate the Malay-translated version of the Center for Epidemiological Study – Depression scale (CES-D) using face validity and construct validity (Appendix A). Subsequently, the reliability of the translated version is determined in order to identify if it is reliable for use in the future.

Methods

Study design and participants

This study employed a cross-sectional study design. The source population was female prisons in the Peninsular Malaysia. Two

prisons were selected as the sampling frame. The sampling method for all phases was purposive selective sampling based on availability of the participants and selection criteria. The inclusion criteria of the participants are ability to read and write in Malay on their own. Female inmates who cannot communicate or understand Malay were excluded from the study. Female inmates who were on death row, serving life sentence or having diagnosed physical or mental health problems were excluded too.

The number of participants for each phase depends on the type of validation method. In phase one which focuses on face validity, 15 female inmates were recruited as the participants. For construct validity in phase two, the sample size was calculated based on Gorsuch's (1983) suggestion that total numbers of items in an instrument are multiplied to 5 to obtain the required number of participants [17]. For reliability testing, the required sample size was calculated based on the Cronbach's alpha formula. With consideration of estimated 20 percent dropout, the higher of the two resulting calculations was taken as the required sample size.

The final required sample size was 120 participants. However, due to limited number of female inmates available at the two selected prisons, a total of 90 participants were successfully recruited. In test-retest phase (phase three), the required sample size was calculated by a statistical software and the final sample size was 40 participants.

Translation process

For the purpose of validation, the researchers translated the English version of the instrument into Malay. The translation process involved two stages. The first stage was forward translation. In this stage, the original English version of the CES-D was translated into Malay by the researchers. After the translation was checked several times for adequacy of wording and sentence, the second stage was conducted.

The Malay version of the CES-D was translated back to English by a psychologist and a medical expert in the field. This stage is

known as back-translation. Both experts had no prior knowledge of the original version of the CES-D. The English-translated version was then compared to the original English version. The final comparison did not find much difference. The final Malay version was checked through by a language expert from a linguistic centre for any grammatical or language error.

Data collection

The research protocol of this study was reviewed and approved by the Research Ethics Committee (Human) of Universiti Sains Malaysia. The data collection was conducted at each respective prison, situated in the Peninsular Malaysia. Prior to the data collection, a briefing was held to explain the purpose of the current study and to communicate relevant information. Any doubts were clarified before seeking the participants' agreement to participate. The participants were assured that they may withdraw from the study at any time during the data collection process. A respondent information sheet and a consent form were given to each respondent to be read and signed. As the respondents agreed to participate in the study, data collection commenced.

In phase one, face validation was conducted. The selected participants (n=15) were asked to go through the Malay version of the CES-D. After reading through the instrument, they were asked if they fully understood the instrument and its meaning. No participant indicated problems with the translated instrument. In the second phase, construct validation and reliability testing were conducted. For this purpose, the Malay version of the CES-D was distributed to the participants (n=90) with the help of the prison staff. The researcher briefly explained the content and how to answer the instrument before asking the participants to complete the instrument. The participants were encouraged to ask if they had any problem with the instrument. The average time taken to complete the instrument was 7 minutes. These completed instruments were returned to the researcher. At the end of phase two, no

participants had indicated problems with the Malay version of the CES-D.

Phase three, which was the test-retest reliability, was conducted after a one-week interval at both prisons. It is considered as the shortest possible time interval to avoid insufficiency of participants due to limitations, such as length of prison incarceration for participants who had been involved in the second phase. In this phase, the same Malay version of the CES-D was given to 40 participants who had involved in phase two. It is to test if the participants would provide the same answer as in the previous phase. The same procedures were repeated as in phase two.

Analysis

The collected data was computed and analyzed using SPSS version 19.0. Descriptive statistics were used to summarize the demographic information and to obtain the descriptive details of depression among the participants. Then, data analysis for construct validity and reliability testing was run.

To explore the construct validity of the translated instrument, confirmatory factor analysis was performed using principal component analysis with varimax rotation. This procedure was selected based on previous studies [9] [16] in order to assess the factor structure of the translated version of the CES-D. Prior to factor analysis, the preliminary analysis for factor analysis was evaluated.

The preliminary analysis indicates the adequacy of the instrument to proceed with factor analysis [18]. The preliminary analysis is represented by the value of the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy, individual Measure of Sampling Adequacy (MSA) and the Bartlett's test of sphericity. The KMO value is expected to exceed the acceptable limit of 0.50 [19], with the individual MSA higher than 0.50 [20]. Some items might have the individual MSA below 0.50. The individual MSA affect the value of the KMO and items with low individual MSA might be excluded from the analysis [20]. Lastly, the Bartlett's test of sphericity indicates the appropriateness of

factor analysis for the translated instrument [20], thus it is expected to be significant.

The analysis then proceeded with assessment of the factor structure. Since confirmatory factor analysis was conducted using SPSS application, the number of factor was fixed based on previous studies [9,16], which is three factors. The number of factors presented the subscales or content domains of the instrument. Each factor explains certain percentage of variance in the instrument. Assessment of the factor structure include factor loading where items that are highly loaded into each factor were examined and then compared to previous studies.

To assess the reliability of the Malay version of the CES-D, the internal consistency and test-retest reliability of the translated instrument were measured. The internal consistency reliability of the instruments is

represented by Cronbach's alpha coefficient (α). Subsequently, Pearson's correlation coefficient (R) was calculated to evaluate the test-retest reliability. The correlation coefficient was calculated for the total score and individual items of the translated instrument.

Results

Demographic information

The participants' ages ranged from 18 to 53 years (Mean = 28.81 years, $SD = 8.01$ years). The summary of participant's demographic information is shown in Table 1. Regarding ethnicity, the majority of them are Malay (87.8%), and most of the participants are married (52.2%). Many of them have secondary education as the highest education level (80.0%) and almost half of them had no stable job before being incarcerated (42.2%).

Table 1. Summary of participants' demographic information (n= 90)

<i>Demographic Information</i>	<i>N</i>	<i>%</i>
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		
Primary	12	13.3
Secondary	72	80.0
Tertiary	6	6.7
Employment prior to incarceration		
Permanent job	34	37.8
Had no stable jobs	39	42.2
Unemployed	18	20.0

Descriptive analysis

In the current study, the mean score for Malay-translated version of the CES-D based on the responses given by the participants is 18.97. In addition, the standard deviation is 6.51. The descriptive summary of the Malay-translated version of the CES-D among the participants

is tabulated in Table 2. Based on the mean score, the participants were divided into two groups; participants who scored below the mean score and participants who scored above the mean score. The percentage of those who scored below the mean score (41.1%) is shown less than those who scored above the mean score (58.9%).

Table 2. Descriptive results for the Malay-translated version of the CES-D

Measurements	Frequency (n)	Percentage (%)
Mean score (<i>SD</i>)	18.97 (6.51)	
Below mean score	37	41.1
Above mean score	53	58.9

Factor analysis

The preliminary analysis for factor analysis of the Malay-translated version of the CES-D showed a satisfactory result. The value of the KMO Measure of Sampling Adequacy was .65. The individual MSA lies within .44 to .78. Some items have low individual MSA.

Nevertheless, since the value of KMO is above the acceptable limit, the analysis proceeded with all items regardless of the individual MSA. In addition, Bartlett's test of sphericity was found highly significant ($p < 0.001$). The factor loading of the translated instrument is shown in Table 3.

Table 3. Factor loadings for the Malay-translated version of the CES-D

Items no	Factor 1	Factor 2	Factor 3
1	0.695		
2	0.568		-.0358
3	0.602		
4		0.467	-0.448
5			0.404
6	0.601		
7		-.0761	
8		0.596	
9			0.406
10	0.493		
11	0.649		-0.373
12		0.466	
13	0.531		-0.459
14	0.681		
15			0.434
16		0.701	
17	0.404		
18	0.661		
19	0.540		
20			0.383

As mentioned earlier, three factors were extracted from the Malay-translated version of the CES-D based on the assessment of the screeplot. They explained 42.20 percent of the total variance. As shown in Table 3, items in Factor 1 are item number 1, 2, 3, 6, 10, 11, 13, 14, 17, 18, and 19. The items largely represent somatic complaints and interpersonal relationship problems. Factor 1 explained 23.06 percent of variance. Items in Factor 2 include item number 4, 7, 8, 12, and 16 which represent positive effect. It explained 10.56 percent of variance. For Factor 3, the items are item number 2, 5, 9, 11, 13, 15, and 20, which

mostly represent depressed affects and explained 8.57 percent of total variability. Several items were found not to fit into the factor compared to previous studies [9] [16].

Reliability testing

The internal consistency of the Malay-translated version of the CES-D was found considerably high. The total Cronbach's alpha of the instrument is equal to 0.75. Cronbach's alpha was also calculated for individual factors. For Factor 1, the Cronbach's alpha is 0.83, whereas for Factor 2, the Cronbach's

alpha is equal to 0.66. The Cronbach's alpha for Factor 3 is 0.60.

The test-retest reliability of the total score is found to be satisfactory ($R=.69$). The Pearson's correlation coefficient for test-retest

is shown in Table 4. Individual items however showed a wide range of variability with the lowest value was item number 20 ($R=.009$) and the highest was item number 7 ($R=.069$). Ten items had a correlation value of less than 0.50.

Table 4. Pearson's coefficient (R) for individual item and total score of the Malay-translated version of the CES-D

Items	Pearson's R
Item 1	0.53
Item 2	0.54
Item 3	0.14
Item 4	0.26
Item 5	0.60
Item 6	0.32
Item 7	0.70
Item 8	0.48
Item 9	0.43
Item 10	0.58
Item 11	0.52
Item 12	0.28
Item 13	0.64
Item 14	0.37
Item 15	0.29
Item 16	0.51
Item 17	0.58
Item 18	0.38
Item 19	0.63
Item 20	0.09
Total	0.69

Discussion

Previous studies on translated versions of the CES-D [8 – 10, 12,14] have yielded findings that are unique to their respective cultural identity. This emphasizes the option to generate a translated version of the CES-D which is unique to the Malaysian culture [16]. In response to this need, an initiative was taken to translate the CES-D into Malay and subsequently, validate the translated instrument among Malaysians. To begin with, the validation of the Malay-translated version of the CES-D involved a small scale, focusing on a population of Malaysian female inmates. This population was chosen because of the availability of the participants at a fixed place as well as possible occurrence of depression. Depression, which is expected to be

considerably high among female inmates [2] [3], may assist in the validating process of the Malay CES-D and at the same time, allow for preliminary identification of the problems among the population.

For the purpose of validating the Malay-translated version of the CES-D, two methods of validation processes were selected. These are face validation and construct validation. Face validity is defined as "the degree that respondents judge that the items of an instrument are appropriate to the targeted construct and assessment objectives" [21, p.99]. It is necessary as a preliminary method to ensure that the targeted construct as measured and respondents are able to understand the assessment objectives of the instrument [21]. Therefore, face validity was

conducted based on the participants' level of comprehension after they had gone through the translated instruments. Upon inquiry by the researcher regarding the translated version, the selected participants unanimously agreed that the instrument can be fully understood and carry the original meanings of the instrument. The participants testified that they had no problems in understanding and responding to each item in the translated version.

Subsequently, construct validation was performed to assess the underlying factor structure of the translated instrument. Radloff (1977) suggested that the original CES-D had four factor structures [6]. However, some previous studies identified only three factor structures in their data for the CES-D [9,16]. Similar to the previous studies, three factor structures were found fit to the Malay-translated version of the CES-D. Therefore, three factors were extracted in the current study. Each factor represents certain depressive factors in reference to the original and previous studies [9,16] including somatic complaints, depressed affects, interpersonal relationship problems, and positive affects. In comparison to a previous study, one item was found not to fit into Factor 2 (item number 7) and one item for Factor 3 (item number 15). Item number 7 was expected to fit into Factor 3 whereas item number 15 was expected to fit into Factor 1 [9,16]. However, in this current study, these two items were loaded into different factors. The Malay translation of item number 7 - *I felt that everything I did was an effort* - is considered to be a positive affect rather than a depressed affect. Item number 15 - *People were unfriendly* - in Malay carries a depressed affect rather than an interpersonal relationship problem. Thus, in the Malay translated version, item number 7 is loaded into Factor 2, whereas item number 15 is loaded into Factor 3.

In determining the validity of an instrument, the reliability of the instrument is equally important. Reliability shows the consistency of an instrument in measuring a construct when given to the same person at a separate time or given to a different person with depression [20]. Two types of reliability often measured are internal consistency and test-retest reliability. In most reliability testing, internal

consistency is represented by the value of Cronbach's alpha, whereas test-retest is represented by Pearson's correlation coefficient or intraclass correlation coefficient. The value of Cronbach's alpha is suggested to be in between 0.70 and 0.80 for an instrument to be considered reliable [20]. Also, the Pearson's correlation coefficient of the instrument, which represents the test-retest reliability in the current study, is expected to be higher than 0.50 to be considered moderately or highly reliable.

The original English version of the CES-D has the internal consistencies of 0.85 and 0.90 among two different populations [6]. In the current study, the Malay-translated version of the CES-D produced a total Cronbach's alpha of 0.75, which is within the suggested reliability range. In comparison to the original English version, the Cronbach's alpha of the Malay-translated version of the CES-D however is lower. The difference between the original English and the Malay-translated version of the CES-D might be explained by the different population being tested, the number of participants involved in each study, and the methods of data collection. In a study conducted by Radloff (1977), the selected populations were healthy general population and clinical psychiatric patients. More than 1,000 individuals from the healthy general population were involved in the study, as well as a group of 105 clinical patients. The method of data collection in all the studies was structured interview [6], which may contribute to bias depending on the perspective of the interviewer. Compared to the original study, the current study involved only 90 female inmates and using self-administered method of data collection. These factors may actually differentiate the value of the Cronbach's alpha between the current study and previous studies. In addition, the internal consistency is expected to be higher among clinical patients compared to the other population [6].

Subsequently, it was found in the Malay-translated version of the CES-D that Factor 2 and Factor 3 had Cronbach's alpha lower than .70. However, both values exceeded the acceptable Cronbach's alpha value ($\alpha > .050$). According to Cortina (1993), the value of Cronbach's alpha depends heavily on the

number of items in an instrument [22] and in the case of a psychological construct, the Cronbach's alpha may go below .70 due to the variety of the constructs being measured [23]. In addition, the nature of items in the factor may influence the internal consistency, such as items that exhibit instability [24]. For example, item number 12 in Factor 2 – *I was happy* – exhibits feature of instability between different people as well as over separate time. Another example is item number 2 in Factor 3 – *I did not feel like eating; my appetite was poor* – also exhibits feature of instability between people.

The test-retest reliability of the Malay-translated version of the CES-D exhibits satisfactory results and explainable inconsistency in some items. The total test-retest reliability was considerably good ($R=.69$). Test-retest reliability assesses the consistency of measures between scores of the instruments given to the same person twice [25]. However, it depends on several factors, including the time interval between test and retest [24], and the effect of memory [26]. As mentioned earlier, the individual Pearson's correlation showed inconsistency between test and retest score in some items where the items had unexpectedly low Pearson's correlation. According to Radloff (1977), the CES-D was designed with the current affective symptoms being focused on, which are expected to fluctuate in between different times [6]. Factors such as changes over time, time interval, and particular life events [6] may explain the variability and the low Pearson's correlation in some items. As an example, item number 3 – *I felt that I could not shake off the blues even with the help from my family or friends*. The response to this item might change over time among the inmates population depending on their chance to interact with others, especially family. Item number 20 – *I could not get "going"* – also may differ over time depending on the participants' emotion at the time the measure was taken. Response to depressive items, especially among prison population is expected to be inconsistent over time with consideration to their imprisoned situation. Nevertheless, the total Pearson's correlation was considerably high and reliable.

Several studies on the translated versions of the CES-D were discussed in the current study. First, the researcher found the version of CES-D that was translated and validated in Greek [9]. The samples were patients diagnosed with major depression and a normal control group. Test-retest in this study was one to two days' interval. The study revealed three factors structure of the Greek version of the CES-D with factor loadings almost similar to the current study. The Cronbach's alpha is 0.95 for the Greek version of the CES-D, with the total Pearson's correlation R equal to .71. The individual Pearson's R was also high ($R = 0.45$ to 0.95) [9]. In comparison to the current study, the shorter time interval between test and retest might contribute to the high Pearson's correlation in the study [6] as well as memory effect [26]. In addition, the sample which involved clinical patients is expected to yield high internal consistency and test-retest reliability [6].

The CES-D was also translated into Korean with Cronbach's alpha of 0.89 [10]. The samples were Korean immigrants who lived in Canada and were compared to published scores of American adults. No test-retest was done. In the study, Noh and colleagues found that the Korean tends to be reluctant to express the positive affects in the CES-D, which resulted in high occurrence of depressive symptoms among the sample. The Korean samples were more likely to respond to negative items, therefore the four positive affect items in the original CES-D were revised to negative items. As a result, the revised Korean version of the CES-D produced a higher internal consistency, which is 0.93 [10]. In another study to validate the Arabic version of the CES-D involving 435 Lebanese community adults, only two factors structure were derived [8]. The study suggested that there is no difference in psychological, somatic and interpersonal expression of depression among the Lebanese, thus revealed only two factors that are depressed affect and lack of positive affect in the Arabic version of the CES-D [8].

In Spanish version, the CES-D produced a Cronbach's alpha of 0.89 [14] among a sample of 554 university students. The factors structure was assessed by exploratory factor

analysis. Similar to the original version, four factors structure were revealed in this study.

However, the factor loading did not match the original four factors structure by Radloff (1977). Also, no test-retest was conducted [14]. Two validation studies on Portuguese version of the CES-D were found. The first study involved two samples which are college students (non-clinical population) and addicts (clinical population) [12]. The study yielded a Cronbach's alpha of 0.85. Factor analysis which was conducted produced four factors structure. Based on structure analysis, two items (item number 2 and 4) were suggested to be excluded due to low correlation with others items [12]. Later, another study to validate the Portuguese version of the CES-D was conducted by Batistoni and colleagues (2007) [13]. They used the same Portuguese version which was validated by Silveira and colleagues (1998) [12] but among a different population. The sample in this second study was Brazilian elderly aged 60 and above (n=903). In their study, Batistoni and colleagues found three factors structure, namely negative affects, problems initiating behaviors, and positive affects. In addition, the internal consistency was equal to 0.86 [13]. No test-retest was found in both studies. In all these studies, none involves offenders or prison population.

Several limitations were acknowledged in the current study. The first limitation is the study population, where only female inmates were involved. Certain factors such as limited freedom, imprisonment experiences, and stressful life events [6] needed to be considered. Inmates may experience higher level of depressive circumstances than the free-living people did, thus influences the reliability of the translated instrument [6]. Therefore, the current validated Malay-translated version of the CES-D is more valid and reliable for use among female inmates than Malaysian population in general. The second limitation is the validation method. In the current study, only two validation methods were exercised. The Malay-translated version of the CES-D was not compared to any gold standard and thus, the cut-off point, sensitivity, and specificity of the translated instrument could not be established. This limits the extent

of applicability for Malay-translated version of the CES-D. More validation methods such as criterion and content validity, as well as a more in-depth data collection method are suggested for future studies. The third limitation is the purposive-selective sampling method which was used to select the participants. In prison settings, the applications of probability sampling methods such as random sampling, systematic sampling, and cluster sampling are limited due to restricted access to certain information related to the inmates. In addition, not all inmates were available during data collection processes therefore the researcher had to purposively select those who were available and fulfilled the selection criteria. The fourth limitation is the time interval for test-retest. Test-retest studies are normally done within one to five weeks interval [27]. In this study, the time interval between test and retest took the shortest possible time interval (i.e., one week) to avoid insufficiency of participants due to certain restriction such as length of stay for participants who had involved in the first phase.

The overall results of face validity, factor analysis, and reliability testing of the Malay-translated version of the CES-D were found to be satisfactory. The Malay version of the CES-D was found comparable to the original version and to previous studies, suggesting that the Malay-translated version is valid and reliable to be used as a tool for screening depression among Malaysian population, especially female inmates, in the future. The validated Malay version of the CES-D is expected to contribute to increase employment of screening tool for depression among females, especially in local settings. Application of simple screening tool would increase the possibility for early detection of depression and thus enable for early diagnosis and interventions. Depression is a common disorder among females, especially for those who live in highly stressful environment (i.e., prisons). The availability of validated screening tool in local language would definitely benefit females in helping them and people around them aware of their problems. In addition, a specific study to design local psychometric instruments may be conducted in

the future with reference to the current findings and limitations.

Acknowledgement

A special thank you to Universiti Sains Malaysia, USM Fellowship, and Malaysian Prison Department (*Jabatan Penjara Malaysia*) for supporting this study.

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Received: 21 June 2013

Accepted: 2 September 2013

Appendix A

Malay-translated version of the CES-D: Pusat untuk Kajian Epidemiologi Skala Kemurungan

Arahan: Di bawah adalah senarai sebahagian perkara yang anda mungkin rasa atau lakukan. Tandakan (✓) pada kenyataan yang paling tepat dengan diri anda.

Sepanjang minggu lepas...	Jarang / tiada	Kadang- kadang (1 – 2 hari)	Kerap kali (3 – 4 hari)	Pada setiap masa (5 – 7 hari)
Fikiran saya diganggu oleh hal yang selalunya tidak mengganggu saya				
Saya tiada selera untuk makan				
Saya rasa saya tidak dapat menghapuskan perasaan tertekan walaupun dengan bantuan kawan-kawan saya				
Saya rasa saya sebaik orang lain				
Saya mempunyai masalah untuk menumpukan perhatian kepada kerja yang saya lakukan				
Saya rasa tertekan				
Saya rasa semua yang saya lakukan adalah satu usaha				
Saya rasa mempunyai harapan yang baik untuk masa depan saya				
Saya fikir hidup saya telah mengalami kegagalan				
Saya merasa sangat takut				
Tidur saya terganggu				
Saya gembira				
Saya bercakap kurang berbanding kebiasaannya				
Saya berasa kesunyian				
Orang di sekeliling saya tidak mesra				
Saya menikmati hidup saya				
Saya memaki-hamun / menyumpah				
Saya berasa sedih				
Saya rasa orang lain tidak sukakan saya				
Saya tidak dapat meneruskan hidup				

ORIGINAL ARTICLE

**FACTORIAL VALIDITY AND RELIABILITY OF THE
SIMPLIFIED-CHINESE VERSION OF SNAITH-
HAMILTON PLEASURE SCALE: A STUDY AMONG
DEPRESSED PATIENTS AT AN OUT-PATIENT
CLINIC IN MALAYSIA**

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Abstract

Objective: The Snaith-Hamilton Pleasure Scale (SHAPS) is a self-assessment scale designed to evaluate anhedonia in various psychiatric disorders. To facilitate its use in Malaysian settings, our current study aimed to examine the validity of the Simplified-Chinese translated version of the SHAPS (SHAPS-SC) in a group of subjects at a university out-patient clinic. **Method:** A total of 40 depressed patients were recruited in this cross sectional study. They were given both the Simplified Chinese and Malay versions of SHAPS, General Health Questionnaire 12 (GHQ-12) and Beck Depression Inventory (BDI) to assess their hedonic state, general mental health condition and level of depression. **Results:** Our study showed that SHAPS-SC had impressive internal consistency (Cronbach's alpha 0.84) and concurrent validity, and fair parallel-forms reliability (Pearson's correlation 0.39). **Conclusion:** SHAPS-SC demonstrated good psychometric properties in the evaluation of hedonic state among a group of Chinese speaking depressed patients in an out-patient setting. It is easy to administer and suitable as a valid and reliable questionnaire in assessing anhedonia among depressed patients in Malaysia. *ASEAN Journal of Psychiatry, Vol. 15 (1): January – June 2014: 66-71.*

Keywords: Depression, Chinese Version, Pleasure Scale, Validation

Introduction

Anhedonia is found to be a major end phenotype[1] and often recognized as the core symptom in the psychopathology of major depressive disorder (MDD). It is defined as the loss of ability to experience pleasure due to dysfunction or impairment of normal psychological and neurobiological mechanisms. In the Diagnostic and Statistical Manual of Mental Disorders, Fourth edition (DSM-IV), a diagnosis of MDD requires that either depressed mood or anhedonia to be present [2]. However, hedonic capacity

frequently receives little research attention, as it is often excluded from many studies in favour of other measures of depression severity.

In depression research, many instruments and scales were shown to be useful, among the more common ones were Snaith-Hamilton Pleasure Scale (SHAPS) [3], Fawcett-Clark Pleasure Scale (FCPS) [4], and the Revised Chapman Physical Anhedonia Scale (CPAS)[5]. However, of all the assessment tools used, SHAPS demonstrated the highest factor loading in defining hedonic capacity

amongst the three scales[6]. SHAPS is essentially a 14-item, self-report instrument developed in 1995, to assess hedonic capacity, with its additional merit over other similar scales of keeping biases in terms of age, cultural and gender differences to a minimum [3]. It not only measures hedonic tone, but also its absence, ie. anhedonia. Four major domains are covered in the scale, namely interest/pastimes, social interaction, sensory experience, and food/drink. All these items are crucial and relate closely to the experiences likely encountered by the majority in a population. As a self-assessment tool, language becomes the determining factor in deciding its simplicity and ease of use especially amongst the local population. Over many years, the scale had been translated into many other major languages in different countries, including French [7], German [8], Dutch [9] and Japanese [10]. All these translated versions of SHAPS had shown great psychometric properties with good clinical applicability. Malaysia is a multi-ethnic country and Chinese language is one of the major languages used in Malaysia, it is therefore very essential to provide our local patients with a Simplified-Chinese translated version of the SHAP scale (SHAPS-SC, see Appendix 1) when assessing their hedonic state. Hence, we conducted our study mainly to validate the Simplified version of SHAPS among a group of outpatients at a clinic in Malaysia, and to ascertain its psychometric properties, particularly its internal consistency, parallel-forms reliability and concurrent validity.

Methods

Study design

This is a cross sectional study conducted at the psychiatric out-patient clinic, University Malaya Medical Centre, Kuala Lumpur, Malaysia from Mar 2013 to Jun 2013. The study protocol was approved by the Medical Ethic Committee (MEC), University Malaya Medical Centre. Patients with major depressive disorder were identified by the treating psychiatrist according to the DSM-IV-TR criteria [11] in the clinic. They were approached and explained about the study. Those who were bilingual (Bahasa Malaysia and Chinese) and agreed to participate were

recruited into the study. Socio-demographic information of the patients (age, gender, ethnicity, education and employment status) was collected. They were then given the following questionnaires for the assessment of their hedonic states, general mental health conditions and levels of depression.

The Assessment Questionnaires

Malay Version of Snaith-Hamilton Pleasure Scale (SHAPS-M)

Snaith-Hamilton Pleasure Scale (SHAPS) is an instrument developed for the assessment of hedonic capacity. It is a self-report scale containing 14 items. Each of the items has a set of four response categories: Definitely Agree, Agree, Disagree, and Definitely Disagree; with Definitely Disagree response receiving a score of 1 and Definitely Agree response receiving a score of 4. Thus, the SHAPS is scored as the sum of 14 items so that total scores range from 14 to 56. A higher total SHAPS score indicates lower level of anhedonia.

The original SHAPS was translated into Malay language. The validity and reliability of the translated version (SHAPS-M) were established in a previous study. SHAPS-M exhibited good internal consistency, with Cronbach's alpha coefficient of 0.96. Parallel-forms reliability of SHAPS-M and original version of SHAPS was fairly good as demonstrated by Pearson's correlation (r) of 0.65 ($p < 0.01$). The excellent internal consistency of this instrument indicated a high level of homogeneity among items in the scale.

The Malay version of the Beck Depression Inventory (BDI)

BDI is a 21-question multiple choice self-report inventory developed by DR. Aaron T. Beck in 1961. It is used to measure the degree of depression which includes the intensity, severity, and depth of depression. The items are scored on a Likert scale ranged from zero to three, which denote the severity of symptoms. Items 1 to 13 evaluate psychological symptoms, while items 14 to 21 evaluate physical symptoms. The total BDI score shows the degree of depression. The higher score indicates more severe depression. The validity

and reliability of the Malay version of the BDI had been established [12]. The internal consistency of the Malay version of the BDI was high (Cronbach's $\alpha = 0.87$) indicating a high level of homogeneity among items in the scale.

The Malay version of the General Health Questionnaire-12

The Malay version of the GHQ12 is the Malay translated version of the original GHQ12. It is a 12-item measure of current mental health. It focuses on two major areas which are the inability to carry out normal functions and the appearance of new and distressing experiences. The items are rated on a 4-point Likert scale with the higher scores yield a greater severity. The validity and reliability of the Malay version of the GHQ12 has been established [13]. The internal consistency was relatively high with a Cronbach's α value of 0.85.

The Malay version of SHAPS was translated into the Simplified-Chinese language by two authors who were bilingual (Malay and Chinese). Another two different authors, who were also bilingual, then back-translated the SHAPS from Simplified Chinese to Malay version, following the back-translation technique [14]. The translated version was pilot tested among 20 Chinese speaking students for face validity. In the Malay translated version, item 8 "I would enjoy looking smart when I have made an effort with my appearance" was revised to "I would enjoy in cleaning and tidying my room" to suit the Malay speaking population culture. However, in the current Simplified Chinese version, the original item 8 was remained. Based

on the popularity and current habit of "Internet surfing", it was added into item 9 "I would enjoy reading book, magazine or newspaper". The finalized version was further reviewed by two consultant psychiatrists for content validity and to ensure satisfactory face, semantic, criterion and conceptual equivalence [15]. All the 40 subjects who consented for the study were given the following questionnaires to be completed: 1. Malay version of SHAPS (SHAPS-M); 2. Simplified Chinese version of SHAPS (SHAPS-SC); 3. Malay version of GHQ; and 4. Malay version of BDI.

Statistical Analysis

The results were analyzed using the Statistical Package for Social Sciences version 13.0. The descriptive statistics were used to examine the baseline characteristic data. The internal consistency of the SHAPS-SC was assessed using the Cronbach's α coefficient. Pearson's correlation (r) was used to examine the parallel reliability between SHAPS-SC with the Malay version of SHAPS; and the concurrent validity between the SHAPS-SC with Malay version of GHQ and BDI.

Results

A total of 40 depressed patients consented for this study. The mean age was 45 years old and most of them were female. All the study subjects were Chinese. Half of the participants were married and achieved at least secondary level of education. Most of them were employed (Table 1).

Table 1. Socio-demographic characteristics of the study subjects

Socio-demographic characteristics	Subjects with depression (N = 40)
Age (years), Mean (sd)	45.28 (14.89)
Gender, n (%)	
Male	14 (35.0)
Female	26 (65.0)
Race, n (%), Chinese	40 (100.0)
Marital status, n (%)	
Single	14 (35.0)
Married	20 (50.0)
Divorced/widowed	6 (15.0)
Education, n (%)	
Primary	5 (12.5)
Secondary	16 (40.0)
Tertiary	18 (45.0)
None	1 (2.5)
Occupation, n (%)	
Employed	21 (52.5)
Unemployed	19 (47.5)

Table 2. Correlation (Pearson's rho) between the Simplified Chinese version of SHAPS (SHAPS-SC) and the Malay version of SHAPS (SHAPS-M), GHQ and BDI

	TotalSHAPS-SC	TotalSHAPS-M	TotalGHQ	TotalBDI
TotalSHAPS-SC	1	0.393*	0.511**	0.290***
TotalSHAPS-M	0.393*	1	0.290	0.356*
TotalGHQ	0.511**	0.290***	1	0.664**
TotalBDI	0.290	0.356*	0.664**	1

SHAPS = Snaith-Hamilton Pleasure Scale, GHQ = General Health Questionnaire, BDI = Beck Depression Inventory, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

SHAPS-SC exhibited good internal consistency, with Cronbach's alpha coefficient of 0.84. The parallel-forms reliability of both SHAPS-SC and SHAPS-M was positive and fair as demonstrated by Pearson's correlation (r) of 0.39 ($p < 0.01$). The low level of parallel reliability was mainly due to the modifications of the items in the SHAPS-SC. There were associations between the anhedonic level with the general health condition and depressive level among the study subjects. These were shown in the result where the SHAPS-SC was positively correlated with GHQ ($r = 0.51$, $p < 0.01$) and BDI ($r = 0.29$, $p < 0.1$) (Table 2).

Discussion

The current cross-sectional study among 40 depressed patients showed that the translated Simplified Chinese version of SHAPS yielded sound psychometric properties in terms of its validity and reliability as an instrument to assess the hedonic state among Malaysian subjects at a university out-patient clinic. Parallel-forms reliability was noted to be fair and its homogeneity among the items which was reflected by its high Cronbach's alpha value had clearly demonstrated the excellent internal consistency of this translated scale.

In order to minimize bias in social class, gender, age, dietary habits and nationality [3], the construct of SHAPS-SC contained items which were generally more relevant and had a wider range of applicability. SHAPS-SC also appeared to be more relevant when used among patients in depressive states as it was a state-level scale which assessed the hedonic capacity based on "experience in the last few days" [6]. Despite the good psychometric properties of SHAPS-SC, our study was hampered by some limitations which should be highlighted. First, being a cross sectional study, there was a higher tendency of recall

bias especially during data collection. Second, clinical information about the depressed patients participating in this study was not presented. In general, SHAPS is not suitable for subjects who are physically ill, as the ability to experience pleasure is definitely an important aspect of the concept of "quality of life"; and the scale is also not valid for blind subjects, as four of the items depend upon visual experience. Finally, our sample size was small and this could have restricted the result from being generalized to an actual clinical sample. Nevertheless, despite all the limitations, the result of our study was still very significant. As for future research, we shall be comparing the anhedonic level between depressed patients and healthy control subjects to determine the cut-off level of the scale.

In conclusion, we found that SHAPS-SC was not only easy to administer, but it was also a reliable and valid assessment tool in measuring the hedonic state among Chinese speaking Malaysians with depressive disorder.

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Received: 9 August 2013

Accepted: 10 September 2013

Appendix 1

斯奈思 - 汉密尔顿愉悦量表

		1=绝对 同意	2=同 意	3=不 同意	4=绝对不 同意
1	我会 享受我最喜欢的电视或收音机节.				
2	我会享受和我的家人或亲密的朋友在一起.				
3	我会在我的业余爱好和消遣中找到乐趣.				
4	我 能够享受我最喜欢的食物.				
5	我会享受洗个热水澡或令人清新的淋浴.				
6	我会在花的芳香或清新的海风或新鲜出炉的面包的 气味中找到乐趣.				
7	我会享受看到别人的笑脸.				
8	我会享受我美观的外表当我已经在我的外表下了 很多工夫.				
9	我会享受阅读书籍, 杂志或报纸.				
10	我会享受饮用一杯茶或咖啡或我最喜爱的饮料.				
11	我会找到乐趣在小的事情, 例如阳光明媚的一天 , 一个朋友打来的电话.				
12	我会享受一道美丽的风景或景象.				
13	我会从帮助他人中得到快乐.				
14	我会感到高兴当我得到他人的赞美.				

ORIGINAL ARTICLE

**MEN DO GET IT: EATING DISORDERS IN MALES
FROM AN ASIAN PERSPECTIVE**

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Abstract

Objective: To examine the clinical features of male patients with eating disorders in Singapore; and determine the differences in clinical features between the patients across the diagnostic categories. **Methods:** This is a database analysis of all male cases presenting to the Eating Disorders Clinic at Singapore General Hospital between 2003 and 2012. **Results:** 72 cases were identified; 36.1% were diagnosed with anorexia nervosa, 33.3% had bulimia nervosa and 30.5% had the diagnosis of eating disorder not otherwise specified. The mean presenting age was 19.9 years. 63.9% were heterosexual, while 15.3% were homosexual/bisexual. 61.1% had comorbid psychiatric diagnoses, with depression being the most common. 59.7% recorded premorbid obesity, while 66.7% reported excessive exercise. The patients in the various diagnostic categories had more similarities than differences. **Conclusion:** With more male cases over the years, it is important to further understand this condition, to better refine prevention, detection and treatment strategies. *ASEAN Journal of Psychiatry, Vol. 15 (1): January – June 2014: 72-82.*

Keywords: Eating Disorders, Males, Singapore, Anorexia, Bulimia

Introduction

Richard Morton published the first report on eating disorder in a male patient in 1689 [1]. Since then, others have also included male patients in their series. Gull acknowledged that anorexia nervosa does occur in males, in one of the first modern case series that described eating disorders [2]. His paper established the term anorexia nervosa in preference to *l'anorexia hysterique*, due to the presence of male patients, who in accordance with the custom of the time, could not be labeled as hysterical. Despite playing an instrumental role in shaping the history of eating disorders, males were ironically theorized out of existence in the 19th and early 20th centuries. Writers either opined that amenorrhea was pertinent for diagnosis or excluded males on the grounds of their atypical psychopathology, attributing their symptoms to other psychiatric disorders [3].

Over the years, understanding of eating disorders has improved. Interestingly though, these data predominantly – or even exclusively – relate to females. Given this backdrop, one could not help but wonder if the disparate female-male prevalence ratio in eating disorders, considered one of the most striking gender differences in psychiatry [4], was a reflection of the inherent nature of the illness, or the inevitable consequence of a lack of understanding and detection in male patients per se.

Historically, data [5] support a male/female ratio of approximately 1:10. Recently, emerging data have challenged this, indicating a ratio of 1:3 [6]. Collectively, these data suggest either a surge in the number of male eating disorders over the years, or a belated awakening in the psychiatry community about its existence. Taken either way, these studies underscore the pressing need to shed more

light on this illness in a much neglected demographic. To improve understanding, Carlat et al [7] compiled one of the largest case series to date, describing 135 patients. While this generated valuable information, the patients involved were mainly Westerners, limiting the generalizability of findings in the Asian context. This is of concern as the features in Asians may differ. Lee et al [8] described the absence of fear of fatness (“fat phobia”) in Hong Kong patients who attributed food refusal to rationales not related to fat phobia, commenting on the possible cultural differences in the manifestation of eating disorders in Chinese. Such conflicting data remain unresolved, as eating disorders, long considered a Western affliction or “culture bound syndrome” [9], continue to receive scant attention. Hitherto, the scarce literature on male eating disorders in an Asian context has regrettably been plagued by small sample size [10].

In this study, we hope to narrow the gap in knowledge by compiling the largest case series to date on eating disorders in Asian males, by studying the characteristics of these patients in Singapore. In addition, cases in each diagnostic category were compared with one another to determine if there were any differences in clinical features.

Methods

This is a database analysis, conducted within the Eating Disorders Programme in Singapore General Hospital, the country’s largest hospital and national referral centre. This study received ethical approval from the hospital’s Institutional Review Board. The Eating Disorders Clinic is the only specialist centre dedicated to the treatment of eating disorders in Singapore. On average, 8 to 9 new cases are seen monthly. Since its inception in April 2003, the Programme has evaluated 982 patients. The service helms the Eating Disorders Treatment Programme, available to both inpatients and outpatients. Diagnoses were established by psychiatrists according to DSM-IV-TR criteria⁽¹¹⁾. All males, evaluated between 1 April 2003 and 31 December 2012, and diagnosed with anorexia nervosa/bulimia nervosa/eating disorder not otherwise specified (EDNOS), were identified. Males with eating disorder-like symptoms arising in

the context of another primary psychiatric diagnosis were excluded.

Case notes were traced and reviewed. Information on the year of presentation, eating disorder diagnosis, demographic factors, family history of psychiatric illness, age at presentation, duration of symptoms, precipitating factors, presence of body image issues, admissions to inpatient facilities/outpatient treatment programs and clinical outcome were recorded. Outcome information is defined as the last known status of the patient at the point of case notes review; this was classified as full recovery, still on follow-up, transferred to another hospital for treatment, or defaulted. Literature was reviewed to identify gender differences in eating disorders. Most studies yielded few gender differences, except the following: excessive exercise [12], pre-morbid obesity [13], sexual orientation [14] and psychiatric co morbidities [15]. These variables were also abstracted onto a structured form.

Data analysis was carried out using Statistical Package for Social Sciences (SPSS) for Windows version 11.0 (Chicago, IL, USA) and SAS 6.2 (SAS Institute Inc, Cary, NC, USA) (for poisson regression). The data were summarized with the use of standard descriptive statistics and 95% confidence intervals for proportions. Sub-analysis evaluated for differences in clinical features between patients from the 3 diagnostic categories. Assumption of normality was tested using the Shapiro-Wilk test. Differences in continuous variables were determined by the Kruskal-Wallis test if they were not normally distributed. Association of categorical variables with the various groups was assessed using chi-square or Fisher’s exact tests. Two-sided p values less than 0.05 were considered statistically significant. To explore the strength of the results from the sub-analysis and estimate the risk of a type II error, power analysis was performed.

Results

A total of 80 cases presented from 2003 to 2012. Of these, 72 were diagnosed with an eating disorder. The diagnoses for the remaining cases were: major depressive disorder with comorbid generalized anxiety

disorder; social phobia; food phobia; obsessive compulsive disorder; and no mental disorder. As shown in Table 1, the ethnic make-up of the sample was: Chinese (76.4%), Malays (4.2%), Indians (9.7%) and Others (9.7%). All patients were single. They were mainly

students (41.7%) and national servicemen (41.7%). Most of the cases were referred from hospitals, with the rest being fairly distributed amongst the other sources of referral – self, primary care physicians, and private psychiatrists.

Table 1. Characteristics of patients

	Number	Percentage (%)
Marital status		
Single	72	100
Married	0	0
Divorced	0	0
Ethnicity		
Chinese	55	76.4
Malay	3	4.2
Indian	7	9.7
Others	7	9.7
Occupation		
Students	30	41.7
Employed	5	6.9
- Professionals	3	4.2
- Associate professionals and technicians	1	1.4
- Service workers/shop and market sales workers	2	2.8
Unemployed	30	41.7
National service	1	1.4
Not recorded		
Source of referral		
Self	9	12.5
Primary care	8	11.1
Hospitals	49	68.1
Others/private psychiatrists	6	8.3
Previous treatment for eating disorder	27	37.5
Family history of psychiatric illness	22	30.6
Identifiable precipitating event	64	88.9
Body image issues	49	68.0
Psychiatric comorbidity		
Major depressive disorder	23	31.9
Alcohol/substance abuse	7	9.7
Obsessive compulsive disorder	8	11.1
Anxiety disorder	3	4.2
Personality disorder	4	5.6
Self-harm/suicide	18	25.0
Sexual orientation		
Heterosexual	46	63.9
Homosexual	10	13.9
Bisexual	1	1.4
Not recorded	15	20.8
Pre-morbid obesity		
Yes	43	59.7
No	26	36.1
Not recorded	3	4.2
Excessive Exercise		
Yes	48	66.7
No	24	33.3
	Mean (years)	Standard deviation
Age of onset of symptoms	17.42	5.09
Age of presentation	19.93	5.56
Duration of illness prior to presentation	3.01	3.30

Anorexia nervosa was the most common diagnosis, followed by bulimia nervosa and EDNOS. Binge eating disorder accounted for 6.9% of the entire cohort. The mean age at first consultation was 19.9 years (SD = 5.56), while the duration of illness prior to presentation was 3.0 years (SD = 3.30). The average age of symptom onset was 17.4 years (SD = 5.09). 37.5% had not responded to prior treatment from other professionals. 88.9% identified a precipitating event for their illness, the most common being overweight and comments/teasing from others about one's appearance (data not shown). The majority of patients was heterosexual and reported pre-morbid obesity and excessive exercise. The commonest psychiatric comorbidity is major depressive disorder (31.9%). Notably, 18 (25.0%) of the subjects reported a history of self-harm or suicides.

Service utilization and clinical outcomes were also delved into. A total of 27 participants were admitted for inpatient stabilization at some point in their illness. 23 out of these 27 inpatients participated in the inpatient Eating Disorders Treatment Programme (EDTP), staying on average 7.26 weeks per enrolment. Outpatient programme was attended by 13 patients, with an average duration of participation at 5.7 weeks. The majority eventually defaulted treatment (48.6%), while those that continued to be on follow-up were 40.3%. 8.3% had recovered and discharged, while the rest (2.8%) were transferred to other treatment facilities, upon patient request.

Further analysis explored clinical differences between the various diagnostic groups (Table 2). These variables were determined *a priori*. 4 cases were omitted from analysis as they were missing some of the variables explored. A significant difference emerged in the length of

hospitalization ($\chi^2 = 14.40$, $p = 0.001$) and length of stay in the inpatient EDTP ($\chi^2 = 12.79$, $p = 0.002$) between the 3 groups. Males with anorexia were hospitalized longer compared to bulimia nervosa ($z = -3.06$, $p = 0.002$) and EDNOS ($z = -3.09$, $p = 0.002$) patients. Males with anorexia were in the inpatient programme longer than bulimia nervosa ($z = -2.42$, $p = 0.015$) and EDNOS ($z = -3.21$, $p = 0.001$) patients. There was a marginally significant difference in the total duration of stay in the inpatient and outpatient EDTP combined ($\chi^2 = 10.30$, $p = 0.006$). Further pair-wise comparisons revealed that males with anorexia participated in the EDTP for a longer period of time than did EDNOS males ($z = -3.06$, $p = 0.002$).

There was also a significant difference in excessive exercise amongst the 3 groups. Using a chi-squared test for independence (with Yates continuity correction), it was seen that males with anorexia exercised significantly more than males with EDNOS ($\chi^2 (1, n = 45) = 5.95$, $p = 0.015$, $\phi = -0.41$).

Power of the analyses conducted for the continuous variables (age at presentation and onset of symptoms, duration of illness at first presentation, number of psychiatric comorbidities, duration of inpatient admission, duration of participation of inpatient and outpatient EDTP) ranged from 0.7 to 0.85. In comparison, power of analyses for the categorical variables (ethnicity, sexual orientation, presence of psychiatric comorbidities, premorbid obesity, excessive exercise, presence of family history of psychiatric illness and previous treatment history for eating disorder) were all less than 0.50. The absence of any differences in the categorical variables could be due to type II error.

Table 2. Clinical differences across diagnostic groups (total sample size = 68)

Variable	Patients with AN (N = 25)		Patients with BN (N = 23)		Patients with EDNOS (N = 20)		Statistical Analysis	
	Mean	SD	Mean	SD	Mean	SD	χ^2	p
Age (years)								
At presentation	18.00	4.38	19.43	2.92	22.90	8.09	5.70	0.058
At onset	16.48	3.28	17.30	2.60	18.80	8.38	1.68	0.432
Treatment delay	1.84	1.95	2.83	2.53	4.65	4.82	5.31	0.070
Duration of inpatient admission (weeks)	4.84	6.16	1.17	2.66	0.95	2.06	14.40	0.001
EDTP (weeks)								
Total duration	4.80	9.09	1.48	2.71	0.65	2.30	10.03	0.006
Inpatient duration	2.58	4.20	0.78	1.83	0.25	0.91	11.46	0.003
Outpatient duration	2.04	5.02	0.70	1.82	0.40	1.39	4.46	0.108
Number of psychiatric co morbidities	1.00	1.08	1.39	1.34	0.90	0.97	1.55	0.46
	N	%	N	%	N	%	χ^2	p
Ethnicity								
Chinese	19	76.0	18	78.26	15	75.0	3.06	0.081
Malay	2	8.00	0	0	1	5.00		
Indian	1	4.00	3	13.04	1	5.00		
Others	3	12.0	2	8.07	2	10.0		
Sexual orientation								
Heterosexual	16	64.0	13	56.62	15	75.0	6.72	0.348
Homosexual	3	12.0	6	26.09	1	5.00		
Bisexual	0	0	1	4.35	0	0		
Unrecorded	6	24.0	3	13.04	4	20.0		
Presence of psychiatric comorbidities								
No	11	44.0	7	30.43	8	40.0	0.971	0.615
Yes	14	56.0	16	69.57	12	60.0		
Premorbid obesity								
No	11	44.0	5	21.74	10	50.0	4.17	0.124
Yes	14	56.0	18	78.26	10	50.0		
Excessive exercise								
No	4	16.0	6	26.09	11	55.5	8.292	0.016
Yes	21	84.0	17	73.91	9	45.5		
Family history of psychiatric illness								
No	16	64.0	17	73.91	15	75.0	0.833	0.659
Yes	9	36.0	6	26.09	5	25.0		
Previous treatment for eating disorder								
No	12	48.0	13	56.52	16	80.0	4.959	0.084
Yes	13	52.0	10	43.48	4	20.0		

EDTP: eating disorders treatment programme

Discussion

The deluge of eating disorders literature focusing the spotlight on female patients has long cast a shadow on males with the same affliction, relegating the latter to oblivion. In the minds of many, male patients are but a mere silhouette – sketchy, with hazy details; always around, but never really present –

milling around in the pool of patients with eating disorders, unobtrusive and unrecognised.

Our findings have helped to profile the male patient with an eating disorder: he is frequently detected from tertiary services, presenting in his late teens, after having wrestled with symptoms in the preceding 3 years. The typical male patient is single, heterosexual and has a history of obesity. He

reports body image issues and assuages his dissatisfaction by excessive exercise, after being triggered by comments on his weight. At the time of diagnosis, he is likely to have anorexia nervosa, and saddled with psychiatric co-morbidities, the most common being major depressive disorder. More often than not, he is not hospitalised for his condition or enrolled in the inpatient/outpatient treatment programmes. However, should the need arise, he is not averse to continuing treatment, spending up to 2 months in hospitalization or treatment programmes.

Taking into account the number of female patients who presented during the same period, the male to female ratio stands at 1: 12.5 (72 male patients versus 902 female patients). This mirrors the trend observed in Western countries [16]. Our patients are from a specialty treatment service and are unlikely to accurately represent the actual number in the community. At best, our numbers are a tip of the iceberg. True enough, data from the West affirm this. Male anorexia is deemed uncommon, with a female/male ratio of 10:1. However, the female/male ratio in a community sample [17] was 2:1 for anorexia and 2.9:1 for bulimia, when including partial syndromes.

Thus, the apparent gender disparity in eating disorders may be an inevitable consequence in the way eating disorders is originally defined, rather than a protective effect conferred by inherent bio-psychosocial differences in males. Scrutinizing DSM-IV TR criteria, it would not be wrong to conclude they were initially conceptualized with the typical female patient in mind. The core psychopathology that establishes a diagnosis of an eating disorder is the over-evaluation of shape and weight. In contrast to the unidirectional drive for thinness in women, body image concerns in men are more variable. These range from being concerned about being overweight and wanting to achieve a leaner ideal, to perceiving themselves to be under-developed and yearning to be “bigger” [18]. While these criteria have saliently distilled the essence of body image issues in females, they have completely sidestepped body image concerns that plague males.

Other diagnostic criteria also have limited clinical utility in identifying males with eating disorders. While long enshrined as the *sine qua non* for diagnosis in females, the requirement of amenorrhoea renders the current diagnostic system *non sequitur* when applied to men.

Nosological gender bias is also inherent in the diagnostic criteria for bulimia nervosa. The most vociferous of criticisms have been levelled at the definition of a binge, which is “(1) eating, in a discrete period of time, an amount of food that is definitely larger than most people would eat ... (2) a sense of lack of control over eating during the episode”. It was shown that men freely acknowledge frequent consumption of large quantities of food [19] but tended not to label this a binge. This is possibly attributable to bingeing being more socially sanctioned for men, leading them to consider bingeing episodes as normal [20]. Furthermore, men experience less “loss of control” in relation to binge eating, which directly affects eating disorder diagnosis.

Feminisation of the disorder may lead to late detection or treatment-seeking amongst males. Results from our study endorse this notion. On average, the male patient in Singapore reports 3.0 years of untreated illness, longer than females [21] (26 months). Though we did not specifically set out to account for the delayed presentation, the finding that the males were mostly referred from tertiary services hint at the diagnostic challenges involved. It is possible that the male patient has to be navigated through the pathway of health care services from primary care eventually to tertiary care, before being sited appropriately in a psychiatric service. This stands in stark contrast to findings from Lee et al, where the sources of referral for the female subjects were fairly evenly distributed amongst the various health care sectors. Similar findings apply to studies involving bulimia nervosa [7].

Our finding that there is an overall delayed presentation in males implies that the diagnosis does not occur until the problem is well-entrenched or has reached dangerous proportions. Bramon-Bosch et al⁽¹⁵⁾ has gone so far to speculate that eating disorders are only diagnosed in males when significant psychiatric comorbidity is present. While

methodological limitations forbid such a conclusion, we did find high psychiatric comorbidity in males. Again, using Lee's study as a basis for comparison, 61.1% of male patients in Singapore had psychiatric comorbidity, much higher than the 31.7% in females [21]. Research elsewhere yielded mixed findings: males with bulimia were similar to females in rates of comorbid psychiatric disorders (such as mood disorders, anxiety disorders and personality disorders), except substance abuse [22]. Other psychiatric comorbidities include psychosis and suicidal behavior.

The high rate of premorbid obesity in our study was replicated in several other studies [4]. This is best explained by research showing that weight concerns were more strongly associated with a high BMI in boys than in girls [23]. However, it remains unknown if the relationship between obesity and eating disorders is causal or associative in nature. This is because it is difficult to establish if disordered eating is the basis for both obesity and eating disorders, independently leading to both entities, thereby creating a spurious association between them, or if obesity actually causes eating disorders by lowering an individual's threshold for initiating disordered eating practices.

It was hardly surprising that most of our cases (68.1%) reported body image issues, considering evidence that established that individuals with body image concerns are at increased risk of disordered eating [24]. Still, there exists an ample body of evidence that suggests otherwise [25]. The conflicting results could be due to: (1) the phenomenon of body image and its manifestations are conceptualized differently in each study; (2) different tools were used to assess body image, precluding comparison of findings across studies [26]; (3) present assessment tools were only specific enough to measure drive for thinness but not adequately sensitive to identify the entire spectrum of men with body image concerns [27]. Sociocultural factors were frequently highlighted to explain the rising tide of discontent in body image in males. Cultural norms of the ideal male body have become increasingly muscular, from men's magazines to even action figurines [28].

The high rate of excessive exercise in our sample concurs with findings elsewhere [29]. Compared to other compensatory mechanisms such as self-induced vomiting, exercise serves the dual purpose of managing unnecessary weight gain and increasing muscle bulk, hence better addressing the underlying the myriad of body image issues in males. It is also a more culturally acceptable means for males [30]. Depression was also commonly observed in patients who exercised excessively. Our findings also point towards this trend. Anderson et al [31], though, observed no gender differences in excessive exercise. They reasoned that exercise is the only compensatory behaviour that allows for the possibility of a bi-directionality of outcome with respect to weight and shape. In other words, just as males are likely to endorse exercise for weight gain, females are similarly inclined to favour it for weight loss. Central to the inconsistent findings lies the varying definition of excessive exercise. Most researches did not clearly defined excessive exercise, or differed in the elements used in their specifications.

Though data on the sexuality rates of the population in Singapore is not available, our finding of 13.9% of homosexuals or bisexuals in the sample is congruent with previous literature on other populations [32], and suggests the link between homosexuality and male eating disorders. One possible explanation is that gay/bisexual men are particularly affected by cultural notions of beauty, as men in general tend to place more emphasis than women on physical attractiveness in their evaluation of potential partners [33]. They are also more likely than heterosexual men to view their bodies as sexual objects, and therefore, like heterosexual women, may be more vulnerable to experiencing body dissatisfaction [34]. The plausibility of these explanations notwithstanding, the association between homosexuality and male eating disorders remains questionable. Being stereotyped as a "feminine" disorder, heterosexual males may be hesitant to admit to having the condition, as doing so would be a direct affront to their masculinity. On the other hand, homosexual men experience more psychosocial stressors, lowering their threshold to seek help.

Our study is one of the few to evaluate service utilisation in males with eating disorders. A significant proportion was not hospitalised (62.5%) or enrolled in the inpatient/outpatient treatment programmes (68.1%). It is unlikely that they were less ill to necessitate further intervention, given that this cohort of patients was established to have more psychiatric comorbidities to begin with. Rather, the reason appears to be the relative unwillingness in males to seek help. Besides the stigma that eating disorders are a female phenomenon, other obstacles help-seeking include the belief that the treatment setting is predominantly helmed by a “feminist treatment philosophy” [35]. Qualitative research has commonly elicited from most male sufferers the desire to be treated like a man [36].

This calls for a gender specific approach in treatment. As research on a specific programme for men is still in an exploratory stage, it may be premature to extensively develop such services, especially when the absolute number of male patients is inadequate to overcome logistic constraints. Until more information is available, treatment services could start by striving to be more gender sensitive, rather than aim to be gender specific.

Despite relatively lower rates of service engagement amongst males, our study showed that, for those who ultimately do, the duration of engagement is up to 2 months long. Research elsewhere shows that the mean number of inpatient days and average cost of inpatient treatment is similar for both genders [37]. For outpatient treatment though, females showed greater utilisation, in terms of duration and costs. With research in this aspect pretty much in its infancy, it may be worthwhile exploring factors that lower males’ resistance for service engagement, and reasons motivating them to stay on in therapy.

With treatment needs unknown and unmet, the outcome data for men is heartening nonetheless. Empirical research suggests no reason to expect a differential or worse outcome for male eating disorders, in terms of response to treatment and prognosis [38].

Carlat et al [7] established the following 1-year follow-up data: 22% had full recovery, 19% partially recovered and 59% continued to

suffer their full eating disorder syndrome. Our data tracked patients over a longer duration and showed that 8.3% fully recovered, 40.3% were still symptomatic, 48.6% defaulted and 2.8% requested to seek treatment elsewhere. While the duration of follow-up and definitions of treatment outcomes in our study differ from Carlat’s, it would be safe to deduce that outcomes in men are likely to be more favourable than described. This is because recovery in eating disorders typically takes years to achieve. Given the relatively short duration of follow-up, and that most patients presented only towards the end of the study period, it is possible that most of them would lack sufficient time to be adequately treated to achieve full recovery. Also, some of those who defaulted may have eventually recovered with time too. Current figures could well underestimate actual recovery rates in men and suggest that the prognosis of eating disorder males could be more favourable than it currently is.

To better help these patients, existing treatment recommendations need not be eschewed, but honed further. For example, psychological interventions could do more to address issues such as stigma and gender identity, arising from being afflicted with a “woman’s disease”. The therapeutic milieu could be enhanced by engaging more male staff, to facilitate group therapy discussions on male concerns. Physical recovery could also be aided with nutritional rehabilitation that is more sensitive to the dietary demands unique to the male body.

Limitations

Being a retrospective study, the quality of the data depended on how thoroughly documented the case records were. Accordingly, sexual orientation was not elicited or recorded in a significant proportion of cases, presumably omitted owing to the sensitive nature of such queries. This impacts the accuracy of rates of sexual orientation in the sample. There may also be recall bias. With preoccupation with weight a symptom of their illness, the patients may more readily report a history of premorbid obesity than a normal person would.

As the cases were identified at a tertiary care institution, their conditions might have been more serious than those managed elsewhere.

Finally, the use of a case series precludes direct comparison with unaffected individuals or female patients, nor does it allow an assessment of the true prevalence and incidence of male eating disorders.

Conclusion

This is the first known study that describes male eating disorders in an Asian context. It provides fresh insights into clinical characteristics of eating disorder patients, and with its focus on Asian males, adds a new dimension to better refine the definition of this condition.

The typical male Asian patient profiled here mirrors the one sketched in existing literature based on the Western population. Taken together, these findings provide a better understanding of male eating disorders, and platform to guide prevention, detection and treatment strategies for this group of patients.

Disclosure of Conflicts

None

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Received: 28 August 2013

Accepted: 13 September 2013

CASE REPORT

PARENTAL ISSUES CONTRIBUTING TO SCHOOL REFUSAL: A CASE REPORT

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Abstract

Objective: This case report aims to highlight the importance of parental contribution to the school refusal problem. **Methods:** We report a case of a 9-year old boy who presented with school refusal behaviour. **Results:** There was no psychiatry diagnosis made in this patient. Parental issues such as ineffective and inconsistent parenting, and parental marital disharmony contribute significantly to the school refusal behaviour. **Conclusion:** Parents in particular are important team players in the management of school refusal. Parental issues need to be explored and managed accordingly to ensure good outcome. *ASEAN Journal of Psychiatry, Vol. 15 (1): January – June 2014: 83-85.*

Keywords: Parental Issues, School Refusal, Child

Introduction

School refusal occurs in about 1-5% school aged children [1,2]. School refusal behaviour is defined as refusal to attend school or any difficulty to attend classes by a child [3]. School refusal is different from truancy which is unexcused absences [4]. Multiple factors contribute to school refusal. In certain situations, psychiatric conditions also contribute to school refusal [1]. This case report highlights the contribution of parental issues to school refusal.

Case Report

MAK, is a nine year-old boy who presented with school refusal since two years ago with worsening of symptoms in the past two months. He had congenital pyloric stenosis which was corrected at the age of one month old and congenital atrial septal defect with spontaneous closure at the age of six years. He had recurrent hospitalisation due to the heart condition during his pre-school years which interfered with his learning. Therefore, he was placed in special classes when he entered

formal schooling at seven years of age as he was unable to read and write. There was no school refusal problem at the time. He picked up reading and writing skills, and completed his first year of schooling with good results.

However, he had difficulty making friends and had only one friend in school. School refusal started at the age of eight years old, after his only friend moved to another school. During school days, he became anxious, started crying and refusing to get out of the car upon reaching school. Many times, his mother failed to get him to the class and had to take him home instead. His mother, who was over-protective, managed the problem by transferring him to the school where his friend had moved to. The whole family moved to a new house near the school. In the new school, he joined his friend's class instead of his own class. The teacher allowed this which further reinforced his behaviour. The school refusal stopped as he gained his demands. Despite regular absences, his school performance was good.

When the new school term started in 2013, he started refusing to go to school again insisting to be in the same class with his friend, who was a year younger. Teachers did not allow this due to the bigger differences in the syllabus which would interfere with his schooling. The school refusal started again. There were no consequences for his behaviour as he could do what he liked at home, when not attending school. His mother tried to negotiate with the school to allow him to be in the same class as his friend. The school authority suggested for psychiatric assessment and treatment. During the consultation, the mother was more interested to get a recommendation letter to keep him in the lower class instead of dealing with the school refusal problem.

MAK was the only child in the family. His father was a foreigner and had no family in Malaysia. He ran his own business while his wife worked as an information technology officer. The marriage was not blessed by the wife's family as she became the second wife. MAK's father was authoritative, punitive, and practised physical punishment when MAK made mistakes. On the other hand, his mother was over-protective and over-involved, complying with all MAK demands. He grew up in a small, isolated family unit, and over-protective environment. His mother's parenting style contributed to his anxiety traits. There was marital disharmony which led to further aggravation of his anxiety. The inconsistent parenting further perpetuated the behaviour problem.

He was accompanied by his parents during the session but was able to be seen alone. There were no features of depression noted. He was very preoccupied with the thought of being in the same class with his friend. Despite normal intellectual function, he had lack of confidence and appeared to be dependent on his mother. His symptoms did not fulfil criteria for any psychiatric diagnosis. The school refusal resulted from his own vulnerabilities such as anxiety traits, poor self-esteem, coping skills and lack of social skills, which were further reinforced by mother's poor parenting style.

School visit was done to explore the situation and to include the teachers as important team players in managing the problem. Behaviour

management and gradual exposure were introduced. Gradual desensitization was used to reduce his anxiety related to school. At the beginning, he was allowed to calm down in the school office before entering his class. Gradually, he was prepared to go straight to his class. Consequences for the behaviour were introduced where positive behaviour i.e. attend school, was rewarded while negative behaviour i.e. school refusal was punished. Parents were advised to cooperate with teachers and comply with the management plan.

Parenting issues were discussed with the parents. They were educated to practise consistent and effective parenting. Parents were also advised for marital counselling. Individual work with the counsellor focused on improving the child's anxiety related to school via breathing and relaxation technique, and improving his social skills, coping skills and self-esteem.

His progress has been positive and largely the result of committed and supportive teachers. Despite the struggle in the morning, he has been attending school regularly. In the class, he slowly started to make friends with few students. His mother continued to be over-protective and inconsistent parenting pursued.

Discussion

School refusal is a common problem seen among children as well as adolescents [5]. Fernando and Perera found that 59.6% of children with school refusal presented with somatic complaints while another 50.6% children had anxiety symptoms [5]. Anxiety disorders (31.6%) and attention deficit hyperactivity disorder (16.4%) were among the most common diagnoses [5]. Other factors causing school refusal include avoiding specific school related fears, escaping from aversive social situations, unresolved separation anxiety, and attention-seeking behaviours [1].

This case illustrates the parental role and contribution to school refusal. Fremont stated that family functioning contributed significantly to school refusal behaviour in children [1]. Early intervention was important

as the behaviour became worse when the child was allowed to stay at home continuously [1].

When a child refuses school, parents particularly become distressed. Yet, parents are often unaware of their contribution to the school refusal. It is important that parents acknowledge their contribution in order to prevent and curb the problem. In this case, the parenting style shaped the vulnerabilities in the child, and predisposed him to school refusal. As the problem progressed, the over-protective and over-involved attitudes of the mother allowed the child to manipulate the situation and worsened the behaviour. Inconsistent parenting allowed further manipulation.

In conclusion, school refusal is a complex problem that needs to be approached holistically. Parents, teachers, and health professionals should work together as a team in dealing with school refusal problems. This case highlights the parental contribution, being among the important factors to be explored. Intervention is holistic and collaborative but parents have to play important roles in the management. Acknowledging their contribution, adopting effective parenting styles, managing problem behaviour, and being good team players are the important aspects to focus on in the management.

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Received: 1 June 2013

Accepted: 22 July 2013

CASE REPORT

ANTENATAL DEPRESSION IN A HIGH-RISK PREGNANCY

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Abstract

Objective: This case report highlights antenatal depression as a common condition with potentially grave outcomes if left untreated. However, treatment options can be limited by the need to protect the fetus from medication-induced side effects. **Methods:** We report a young female obstetric patient who was carrying twins conceived through assisted reproduction, and her pregnancy was complicated by placenta previa major and repeated antepartum hemorrhages, which necessitated multiple admissions and strict bed rest. She became intensely depressed and anxious, developed suicidal ideation and refused examinations that were necessary to her physical health. She was referred to a psychiatrist and was given low-dose medication, supportive counseling, and case management. **Results:** She responded well to treatment, showing marked improvement in her mood and cooperation with obstetric care. Her twins were delivered at 35 weeks' gestation in good health. Her progress was maintained into the postpartum period. **Conclusions:** This case of antenatal depression was successfully treated using a combination of medication, case management and psychological support. It adds to evidence that this illness benefits from early identification and is highly treatable. *ASEAN Journal of Psychiatry, Vol. 15 (1): January – June 2014: 86-89.*

Keywords: Antenatal Depression, Antidepressants, Psychiatric Case Management

Introduction

Pregnancy is often assumed to be a joyous event, but the truth is that antenatal depression occurs in 12.2% of pregnant women in Singapore [1]. Left untreated, the illness can debilitate an expectant mother and put her at risk of self-harm. It can also restrict fetal growth and increase the risk of preterm labour. Furthermore, anxiety frequently accompanies and complicates depression, particularly in the first and third trimesters [2]. Subsequently, antenatal depression becomes a strong predictor for postnatal depression [3], which in turn predisposes toward parenting stress and difficulties in mother-infant bonding [4].

For these reasons, antenatal depression needs prompt identification and effective treatment. Yet, pregnancy limits the range of usable antidepressants because of the need to minimize fetal side effects. Paroxetine, for example, has been shown to increase the odds of fetal cardiac malformations by 1.7 times when taken in the first trimester [5]. Treating antenatal depression, therefore, requires a good balance between efficacy and safety. This case report illustrates how this has been achieved in an obstetric inpatient with a high-risk pregnancy. It has been written with her informed consent and the approval of the hospital's Institutional Review Board.

Case report

A healthy, married Chinese woman in her early thirties, working as a professional, underwent intrauterine insemination (IUI) because she and her husband had been unable to conceive naturally. The IUI was successful and resulted in dichorionic diamniotic twins, one male and one female. Unfortunately, the pregnancy was complicated by placenta previa major (PPM), which caused repeated antepartum hemorrhages (APH). The male fetus was also found to have ventriculomegaly. In addition, the patient was Group B Streptococcus positive.

After her third APH at 24 weeks' gestation, she was admitted for inpatient obstetric management. An ultrasound showed that her placental edge was touching the cervical os, and that there was a retroplacental clot, but fetal movements were good and there was no sign of premature labour. Treatment with oral Nifedipine and intramuscular (IM) Dexamethasone was quickly started, with satisfactory initial response. However, she became distressed about the cardiotocography (CTG) monitoring because the pickup was consistently poor for one of the twins, and she had a painful topical allergy to skin gel. She was repeatedly observed by the nursing staff to be "very anxious". Finally, she refused any further CTGs, and she was discharged against medical advice on the sixth day.

Another APH occurred the next day and she returned to the ward. She was given more Nifedipine and weekly IM Hydroxyprogesterone depots, and was confined strictly to bed. However, she continued to bleed and began to experience irregular contractions. Due to tachycardia and breathlessness, she was able to tolerate only low doses of intravenous (IV) Salbutamol. She started feeling intolerably depressed and overwhelmed, and continued refusing CTG monitoring as well as vaginal speculum examinations. During the second week of admission, she started to experience suicidal thoughts and asked to see a psychiatrist. During the psychiatric consultation, she was found to have definitive signs of depression and anxiety. Her mood was persistently low; her sleep, appetite and concentration were poor; her thoughts were extremely negative;

and she had fleeting urges to jump out the window. Much of this was due to uncertainty about her babies, as well as the sudden restriction from her usual activities. In addition, she was somewhat anxious and perfectionistic by nature, and had a deep but troubled Christian faith. She had come to associate APH with divine rejection, and took each bleed as a sign that God hated her, and wanted her and her babies dead. Although these thoughts were not of delusional intensity, they were persistent and caused her significant emotional distress. In the same way, she was oversensitive towards her husband and would think the worst of his intentions. For example, if he was late in visiting or spoke abruptly, she would immediately feel unloved and unwanted, and this would set off a quarrel. She condemned herself as having "no courage, no strength".

She was given Dothiepin up to a dose of 50mg nocte, and Promethazine theoclate - an antihistamine, for sedation- up to 37.5mg daily, in divided doses. After two days of this regime, her sleep improved and she became calmer. In addition to medication, she received support from her psychiatric case manager, who visited twice weekly to provide supportive counseling - based on cognitive behavior therapy techniques - and guide her through relaxation exercises. The patient was encouraged to cope with her catastrophic thinking by writing down her negative thoughts in a diary and coming up with a rational counter-argument to each one. She consciously wrote out positive past events as evidence that God and her husband loved her. She practised her relaxation exercises and found them to be helpful each time she approached an emotional breakdown.

Over the next few weeks, she continued having sporadic light bleeds, irregular contractions and breathlessness. She had to be moved to the labour ward for observation several times, which she found difficult because of the disruption, strict routines, and busy staff. Nonetheless, upon psychiatric review every few days, she was able to cope and cooperate better because she was feeling more cheerful and positive. She became insightful and motivated, and learnt how to self-counsel when she recognized her own over-reaction to events.

The PPM resolved with time and the bleeds stabilized. The male twin's ventriculomegaly remained mild and he had no other anomalies. The patient was able to leave her bed for short periods and practiced mobilizing with the aid of a physiotherapist. She was greatly pleased when her twins reached a viable age, and decided to maintain her pregnancy as close to term as she could manage. Dothiepin was gradually tailed down and taken off in the week preceding the delivery, in order to prevent withdrawal symptoms in the babies, while Promethazine was given only when needed. Finally, she underwent an elective Caesarean section at 35 weeks' gestation, giving birth to small but healthy twins who were discharged after a few days' observation in the neonatal high-dependency unit. Upon her own discharge, the patient was well enough to remain off psychotropic medication.

She was in stable condition during her outpatient psychiatric appointment six weeks later. Both her babies were healthy and gaining weight well, and she was taking much pleasure in them.

Discussion

Many factors came together to result in antenatal depression in this patient. In addition to the PPM, her son's ventriculomegaly, the side effects of her obstetric treatment, and her perfectionistic nature, she had to cope with the emotional issues intrinsic to the need for assisted reproduction. Women who have trouble conceiving are at increased risk of developing grief, self-blame, marital problems and mental illness [2]. Among Swedish couples seeking *in vitro* fertilization, the prevalence of mood disorders is 26.2%, while anxiety disorders are seen in 14.8% of the women [6]. With all this, it is easy to understand why this patient became depressed and anxious. Nonetheless, it was difficult, particularly for the obstetric nursing staff, to provide optimal care when she had suicidal thoughts and refused examinations that were pertinent to her physical condition. This highlights the importance of treating antenatal depression effectively and quickly.

The choice of a tricyclic antidepressant (TCA) for this patient was evidence-based. The NICE guidelines (Antenatal 2007) state that TCAs

have lower known risks during pregnancy than other antidepressants. Also, selective serotonin reuptake inhibitors (SSRIs) may increase the risk of persistent pulmonary hypertension in the newborn when used after 20 weeks' gestation [7]. Furthermore, a review of antenatal antidepressant use found an association between SSRIs and neonatal adaptation syndrome, which is a cluster of symptoms that includes irritability, tremor, poor feeding and respiratory distress in the newborn [8]. Dothiepin was given together with promethazine, which has been safely used as an antiemetic and sedative in pregnant women for decades. Both medications were prescribed at the lowest effective doses and tailed off a few days before delivery, so as to prevent neonatal withdrawal.

In addition to the biological benefits of medication, practical help and cognitive reframing were provided by the psychiatric case manager, in the form of rapport building, psychoeducation and supportive counseling [9]. These interventions are known to be efficacious and highly acceptable in perinatal patients [10]. In particular, this patient had a dedicated case manager, and was therefore able to feel that she had a constant and secure environment in which she could safely ventilate without fear of being judged.

Altogether, this multi-pronged approach – comprising low-dose medication, supportive counseling and case management – proved both efficacious and safe in the treatment of this patient with antenatal depression, and helps provide a framework to aid the recovery of other mothers in similar positions.

Acknowledgments

The authors extend grateful thanks to the patient and her children described in this report, and also to the members of the Department of Psychological Medicine of KK Hospital for their clinical, administrative and moral support.

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Received: 19 June 2013

Accepted: 23 July 2013

CASE REPORT

CLOZAPINE RE-CHALLENGE WITH LITHIUM SUPPLEMENTATION FOLLOWING CLOZAPINE-INDUCED NEUTROPENIA

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Abstract

Objectives: This paper aims to report on a case in which re-challenging with clozapine in combination with lithium in a patient who developed neutropenia was carried out. **Methods:** The patient was treated with clozapine for treatment-resistant schizophrenia. After five weeks he showed much improvement but developed neutropenia. Withdrawal of clozapine brought on a relapse of psychotic symptoms. Subsequently, clozapine was reintroduced along with Lithium. The neutrophil count was monitored closely. **Results:** The neutrophil and white blood cell count were noted to return to normal upon re-challenging, and the patient's clinical condition also improved. **Conclusion:** Simultaneous administration of lithium and clozapine to patients experiencing neutropenia on clozapine is a possible strategy. However, very close monitoring of the white count is needed. *ASEAN Journal of Psychiatry, Vol. 15 (1): January – June 2014: 90-92.*

Keywords: Clozapine, Clozapine Re-challenge, Lithium, Neutropenia

Introduction

Clozapine is considered a classic model of an atypical antipsychotic [1]. It has been reserved for the treatment of treatment-resistant schizophrenia (TRS). One of its major disadvantages however, is the occurrence of idiosyncratic blood dyscrasias, namely neutropenia and/or agranulocytosis.

Around 2.7% of patients will develop neutropenia once exposed to clozapine; of these, 50% will develop it in the first 18 weeks of treatment [2]. When patients develop severe neutropenia or agranulocytosis, the guidelines advise the withdrawal of clozapine and advise against re-challenge [3]. However, withdrawal of clozapine usually leads to worsening of the psychotic symptoms. Hence strategies are needed to continue the clozapine, if possible, without any detrimental effect on the granulocyte count. In this paper, we present one such strategy – that of adding lithium

which is known to induce leucocytosis, thereby antagonizing the neutropenic effect of clozapine [4].

Case Report

Mr A, is a 32 year-old gentleman, who has suffered from schizophrenia since the age of 23. He has had numerous relapses and 5 admissions in 2 years. He was admitted to the ward due to an acute exacerbation of schizophrenia, with aggressive behaviour, auditory hallucinations commanding him to commit suicide. Throughout the past years, he has been treated with adequate doses of various antipsychotics for adequate duration of time on each drug. Among the medications he was on before were olanzapine, paliperidone and IM fluphenazine depot. Despite adhering to treatment regime, he showed a poor response to all the medications. He was therefore started on clozapine because of the

treatment resistance and persistent suicidal risk due to commanding auditory hallucinations.

His baseline Full Blood Count showed normal results: haemoglobin (Hb) 15.6 g/dL, white blood cell (WBC) count $5.6 \times 10^9/L$; platelet count $379 \times 10^9/L$; absolute neutrophil count (ANC) $3.5 \times 10^9/L$. Renal function and electro-cardiogram (ECG) were normal. He was started on clozapine 12.5 mg nocte and the dose was titrated up gradually following Maudsley Guidelines [5]. At the same time, other drugs were discontinued. By the fourth week, the dose of clozapine was increased to a total of 350 mg daily in divided doses. Apart from sedation and sinus tachycardia, Mr. A did not develop any other adverse effects such as postural hypotension or hypersalivation. The FBC was repeated weekly and yielded normal

results. Clinically, the patient made good improvement in his positive and negative symptoms.

As shown in Figure 1, in the fifth week of clozapine treatment, the ANC and WBC started to decrease (WBC ranging between 3.0 to $2.1 \times 10^9/L$, ANC ranging between 1.3 to $0.9 \times 10^9/L$). With these low levels, it was decided to withdraw clozapine before the white cell numbers declined further. The patient had no upper respiratory tract symptoms like fever, sore throat, and cough or other signs of infections. Clozapine was tapered off in 2 days before it was completely withheld. Clozapine was substituted with haloperidol reaching a dose of 7.5 mg daily in divided doses.

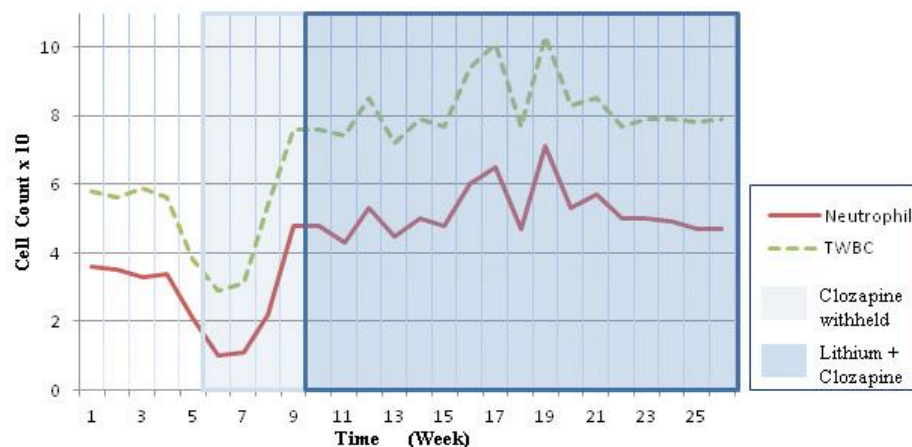


Fig. 1: The trend of patient's total white blood cell (TWBC) and neutrophil count over time (week). Clozapine was withheld at 5th week (light scale) and re-challenge at 9th week along with lithium (dark scale).

The FBC was repeated more closely (i.e every other day) and within two weeks of withdrawing clozapine, the WBC and ANC were noted to stabilize to the pre-neutropenic levels (WBC: $5.4 \times 10^9/L$ and ANC: $2.2 \times 10^9/L$). The patient, however, began to relapse and his previous psychotic symptoms returned. He became aggressive again and his family was unable to cope with caring for him. It was decided therefore to re-challenge with clozapine together with lithium.

Clozapine was introduced at a slower rate, starting at 6.25 mg nocte, and slowly increased

by 6.25 mg every 3-4 days. Lithium was started at the same time at 600 mg a day. It was titrated up to achieve a stable lithium level of about 0.6 mmol/l. The WBC and ANC results have been stable since then (7.6 - $10.3 \times 10^9/L$ and 4.8 - $7 \times 10^9/L$ respectively) [Fig. 1]. The patient again showed an improvement on clozapine. Lithium level of 0.54 mmol/l was achieved. At this stabilized level, the patient had only minimal psychiatric symptoms, without any suicidal thoughts, intentions and/or acts. He has continued to remain well since.

Discussion

The combination of clozapine and lithium has not been studied extensively [6]. The mechanism behind the occurrence of clozapine-induced neutropenia is thought to be premature peripheral destruction in the blood or spleen whereas the severe form of agranulocytosis is caused by bone marrow suppression [7] via stimulation of granulocyte-macrophage colony stimulating factor (GM-CSF) [6].

This case report revisits the issue whether clozapine should be discontinued when patients develop blood dyscrasias. Nielson J et al. (2013) are of the opinion that re-challenging might be useful in neutropenia but clozapine should be discontinued in the event of agranulocytosis [3]. Dunk et al (2006) showed that the second reaction of agranulocytosis will be more severe and lasts longer [8]. About 20% of patients receiving combination of clozapine-lithium develop neurotoxicity [9].

Conclusion

This case report suggests that clozapine re-challenge may be considered for some patients who would otherwise be left to suffer the disabling effects of treatment-resistant schizophrenia. There is no current consensus on the dosage of lithium to be used in cases of clozapine re-challenge and lithium use is not without risk. Therefore this should be done with close monitoring.

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Received: 2 June 2013

Accepted: 24 July 2013

CASE REPORT

MEMANTINE AUGMENTATION IN THE TREATMENT OF FRONTAL LOBE SYNDROME IN PATIENTS WITH END-STAGE RENAL DISEASE: A CASE REPORT

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Abstract

Objective: This case report highlights the challenges in managing Frontal Lobe Syndrome (FLS) in a patient with end-stage renal disease. **Methods:** This is a case description of a 58 year-old gentleman who presented with behavioural changes: irritability, mood lability, aggression, psychosis, and overfamiliarity. His presenting symptoms were in keeping with (FLS) with positive findings on Computed Tomography (CT) scan of the brain and also neuropsychological assessments. Difficulties arose in attempts to control his aggression without further compromising his renal function. **Results:** The usage of the commonly used antipsychotics in controlling aggression was restricted in view of the patient's renal impairment. Augmentation with low dose memantine proved to be beneficial in this case, without causing further deterioration in renal function. **Conclusion:** The use of memantine to augment the effect of risperidone was observed to be safe and successful in managing the behavioural changes associated with FLS in adults with end-stage renal disease. *ASEAN Journal of Psychiatry, Vol. 15 (1): January – June 2014: 93-96.*

Keywords: Frontal Lobe Syndrome, Aggression, Diabetes, End-Stage Renal Disease, Memantine

Introduction

Frontal lobe syndrome (FLS) is known to be associated with aggression, impulsivity, mood lability and social inappropriateness[1]. The changes in personality associated with the syndrome can be challenging as well as devastating to his/her loved ones when the patient starts becoming destructive. It is well-recognized that the treatment of FLS is tailored to its aetiology. Adults with Type 2 diabetes and hypertension are at higher risk for this condition as diabetes is associated with frontal lobe volume reduction [2], while hypertension is associated with frontal lobe atrophy [3]. Cerebrovascular accidents are also common in these two illnesses, where silent infarcts can occur at any site of the brain, including the frontal lobes [4]. Complications

from medical illness may influence the effectiveness of management. This case report highlights the challenges in managing this syndrome in a patient with end-stage renal failure, in whom the use of the usual dosage range of antipsychotics is not advisable.

Case Report

Mr. AB began having changes in his behaviour in September 2012. The changes included overfriendliness (from a person who prefers to stay at home, he spends a lot of his time strolling around the housing area on his wheelchair making remarks to passers-by), spending sprees (buying many small toys such as cars and airplanes for collection) and hoarding compulsion (bringing home broken electrical goods with plans to fix them, which

he never did). His spending sprees made him popular among children in the housing area as he would lavish them with candies.

Later he became easily irritable and demanding. This occurred about a month after the behavioural changes started. As the irritability set in, lability of mood followed (he would easily snap at his wife but later be seen crying over trivial matters). He was also verbally as well as physically abusive. He started shouting with foul words, kicking and punching at the furniture, breaking glasses, throwing things at homes. There were times when he hit his wife.

At the same time he also started having persecutory delusions that his neighbours were against him and planning to do bad things to him (which he was not able to specify). There was also presence of auditory hallucination, where he admitted hearing voices of his friends talking to him. His wife claimed she had seen him talking and laughing to himself. He had stopped sexual relations with his wife for many years due to erectile dysfunction associated with diabetes. However, he recently started making sexual advances towards her and when she declined, he would accuse her of having an affair.

There was no marked memory impairment but his wife noted some impairment in his cognitive functioning such as frequently misplacing things and needing reminders for self-care. He also needed assistance with dressing as well as eating as he had become somewhat clumsy; wearing shirts inside out and being messy at the dinner table despite absence of physical deficits. She described her husband as an almost totally changed man. Before his symptoms began, AB reportedly was a caring, quiet and reserved person. He used to work as a technician with a telecommunication company and colleagues described him as a hardworking and easy person to get along with. He had to take early retirement (at the age of 42) as his poor diabetic control resulted in bilateral below knee amputation of both legs and also poor eye-sight. Later he developed end-stage renal failure requiring haemodialysis. He also has hypertension and hypercholesterolaemia.

One night AB broke a glass window and threatened to kill himself with a broken piece of glass following an argument with his wife. Police assistance was sought to help bring him to the hospital. A CT scan of the brain done on admission showed multifocal infarcts of both frontal lobes. The infarcts in the left lobe were noted to be recent. This scan was compared with a CT scan that was done in August the same year (he was complaining of facial numbness at that time) and no infarcts in the left frontal lobe was noted then. Haematological and biochemical analyses were all within normal/acceptable limits. He was admitted to stabilize his condition and a careful history taking was taken from the patient as well as corroborative history from his family members (wife, daughter and son-in-law). No remarkable findings were detected on clinical examination apart from the bilateral below knee amputations as well as diabetic retinopathy on fundoscopy. AB was also noted to have poor reasoning as well as poor grasp of the consequence of his actions. For example, he claimed that breaking the furniture was acceptable as they were his belongings and that abusing his wife was also acceptable because of his invalid condition.

He scored 27/30 for his mini-mental state examination (MMSE)[5]. This is not surprising as MMSE is not a sensitive tool for frontal lobe dysfunction [6]. His Frontal Assessment Battery score was 12/18, which was inconclusive to directly point towards frontal lobe dysfunction [7]. There was impaired performance on Trail Making Test and Matrix Reasoning tasks, which indicated poor performance on executive functioning. His performance on both verbal memory and non-verbal memory was severely impaired (2 standard deviations below normal). Poor information processing speed and working memory were evident with low score on Digit Span and Digit Symbol Task.

Based on the above findings, a diagnosis of Frontal Lobe Syndrome was made. Risperidone was started to manage his aggression. The dose was titrated up rather slowly due to his poor renal function, hence slow response was observed. His aggression only slightly improved at 2mg but no further increment of dose was possible to avoid dose

related side-effects due to impaired excretion. His family was keen to care for him at home at this point despite medical advice against discharge. He was re-admitted the same day as he had attempted to jump out his room window after a row with his wife.

After careful consideration, memantine 5mg nocte, off-label, was added. Memantine, an NMDA (glutamate) receptor antagonist was chosen because it is indicated in dementia with

behavioural and psychological symptoms of dementia (BPSD) [8] and many of the patient's symptoms represent BPSD. Thereafter, his condition continued to improve. His psychosis diminished and his mood was more manageable. His family members were given psychoeducation with regards to his behavioural symptoms, course of his illness and also on how to manage him at home. His renal function was monitored and no deterioration was observed.

Table 1. Renal profile results

Renal Profile (Normal values)	On admission	5 days after memantine	6 months post memantine
Na (135 – 150)	135	134	138
K (3.5 – 5.0)	4.0	4.5	3.7
Urea (2.5 – 6.4)	8.9	12.8	8.4
Creatinine (62-106)	526	482	484

*These results are post-dialysis analysis

Mr. AB was finally discharged home after 22 days of admission. His discharge medications were risperidone 1mg BD and memantine 5mg nocte. At his follow-up visit, his wife claimed that she had reduced his memantine dose to 5mg every other night due to sedation. Nonetheless, she reported that he has been manageable, though not back to his usual self. There have been instances of behavioural outbreaks, which were manageable as well as tolerable. He continued to remain relatively well on further follow-up appointments. Family members were able to accept the changes in his personality.

Discussion

For Mr. AB, the areas of concern in his condition are impulsivity and aggression. Risperidone was the drug of choice in his initial treatment plan because of its safety and tolerability profile, effectiveness and also cost. However, due to the problem of end-stage renal failure, caution was needed with regards to dosage and titration. It is interesting to note that augmentation with memantine helped to improve his condition remarkably. Though memantine is not advisable in patients with renal disease, there is no absolute contra-indication for the use of low-dose memantine. This case highlights the importance of

individualised care. There were no signs of deterioration in his renal function on subsequent follow-ups.

Conclusion

The combination of low dose memantine with an antipsychotic in controlling aggression associated with frontal lobe syndrome in older adults with end-stage renal failure maybe safe and beneficial.

Acknowledgement

The authors wish to thank the Director of the UKM Medical Centre for permission to publish this case data.

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Received: 2 June 2013

Accepted: 25 July 2013

CASE REPORT

CRIME OFFENDER WITH MENTAL RETARDATION: A CASE REPORT

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Abstract

Objective: This case report aims to discuss the diagnosis of mental retardation as insanity defence in a crime offender. **Methods:** We report a gentleman who committed murder and rape 9 years ago, and currently being treated at a mental institution. **Results:** Patient was certified to have mental retardation, and was pleaded on the defence of unsoundness of mind because he had defect of reason at the time of alleged offence. **Conclusion:** Mental retardation does fulfil the McNaughton's rule. Unsoundness of mind becomes the insanity defence even for murder under section 84 of the Penal Code. *ASEAN Journal of Psychiatry, Vol. 15 (1): January – June 2014: 97-100.*

Keywords: Crime Offender, Mental Retardation, Insanity Defence

Introduction

Mental retardation is coded on Axis II in DSM-IV-TR although it is under disorders usually first diagnosed in infancy, childhood, or adolescence [1]. According to DSM-IV-TR, the definition of mental retardation is significantly subaverage intellectual functioning associated with concurrent deficits in adaptive functioning manifested before age 18 years [1].

The relationship between criminality and mental retardation is rather complex [2]. Seventy five percent of mentally retarded criminal offenders often involved with crimes against property [2]. There are no proper studies done in Malaysia to see any relationship between the types of offences done by mentally retarded criminal offenders and their verdict. Since Malaysian law does not have statutory provision for diminished responsibility, therefore insanity defence is commonly used for crime offenders with mental retardation. This case report aims to

highlight the diagnosis of mental retardation as an insanity defence in a murder and rape case.

Case Report

A 40-year-old Malay gentleman was admitted to the Forensic Unit, Hospital Bahagia Ulu Kinta (HBUK) on 30th December 2009 under Section 348(i) Criminal Procedure Code (CPC) for treatment of his mental retardation under Section 302 and 376 Penal Code for murdered and raped a 9-year-old Malay girl on 21st December 2004 between 2.00pm to 4.00pm. The index offence took place at the palm oil estate in the patient's neighbourhood. The history given by the patient regarding the index offence was inconsistent. The victim was known to the patient as they lived in the same neighbourhood. On the day of the alleged incident, the victim asked patient to help her to fix her bicycle's chain. After fixing the victim's bicycle, patient took her to the palm oil estate nearby and pushed her down. When the victim started screaming out for help, patient knocked her head with stone and punched her. Patient claimed that the victim

was suddenly not moving and no more sounds heard. He raped her and later dumped her inside the drain and left the estate. Collateral history from his family members, the investigating officer, his past forensic report, and all investigation reports were incorporated in this case report.

Patient was arrested in September 2006, 21 months after his alleged offence and was charged after his DNA found matched with that found on the victim. He was sent to the Forensic Unit, HBUK on 22nd August 2007 under Section 342(iii) CPC for assessment of his fitness to plead. Patient was further detained for extension under Section 342(iv) CPC and was discharged from the Forensic Unit on 17th October 2007 after his medical report was prepared. He was sent to our Forensic Unit on 30th December 2009 under Section 348(i) Criminal Procedure Code (CPC) after he was ascertained as not guilty ~~in~~ on the reason of insanity. The admission into the psychiatric hospital was for further management under the Ruler's pleasure by His Royal Highness the Sultan of Kedah. The order under Section 348(ii), received on 7th March 2010, allowed the patient to be kept in the inner ward.

Patient is the 8th out of 10 siblings. His father had passed away in 2002. Patient stayed in Sungai Petani, Kedah with his mother and his 6th brother; this brother also has mental illness. All his other siblings were married and stayed in Kuala Lumpur. He was born at full term via normal delivery. No complications were noted during pregnancy, delivery and post-natal. At the age of 1 year, patient had high grade fever but was not hospitalised. Since then, mother noted his milestones development had become delayed. Patient was sent to normal school but only attended for few days as he refused to go as he was unable to understand and cope with the teaching. He was sent to several special education schools. He had poor attention and was unable to read and write. Patient had few friends and seldom talks to stranger. He had lack of personal, social and communication skills and prefers to be friends with those younger than his age. He can be easily influenced by others and has poor impulse control. Apart from that, he likes to watch television especially cartoon series during his

free time. Patient has never been employed before.

His past forensic history revealed that he had history of admission to the Forensic Unit, HBUK for the first time on 26th May 1993 under Section 342 CPC after being charged under Section 436 Penal Code for mischief with fire. Patient set fire to his special education school (School for Mentally Retarded in Sungai Petani). He was diagnosed to have mental retardation with behavioural problems and was presented to the Court. He was sent back to HBUK on 29th September 1993 under Section 344 CPC for detention as he was found unfit to plead by the same court. His family requested for discharge under their care and guarantee, and the case was presented to the Board of Visitors (BOV) of HBUK. He was released on 15th June 1998 back to his family under Section 351 CPC after receiving approval by the Kedah State Secretary Office. Apart from that, patient also had 3 subsequent civil admissions at HBUK in between July 1998 to December 2000. Patient has no chronic medical illness.

Regarding substance history, patient claimed that he had tried glue sniffing occasionally under peer influence. The last time he sniffed glue was before he met the victim. No history of abusing other illicit drugs. Mental state examination revealed a young Malay gentleman, calm and cooperative with good eye contact. He speaks in Malay language softly with low tone, relevant and coherent. He needed repetitive questioning using simple Malay language, and sometimes his answers were inconsistent. His mood was euthymic with restricted affect. No perceptual or thought disturbances. He could not read, write and do simple mathematical equations. His judgement and insight were poor. Physical and neurological examinations were unremarkable. Laboratory investigations for both blood and urine samples were normal. Intelligence quotient (IQ) test done showed that patient had mild mental retardation.

For the past 3 years since he has been detained in HBUK, patient remains well. There were no psychotic symptoms, no depressive symptoms, and no suicidal ideation reported and patient was cooperative and behaving well most of the time. He is not on any pharmacological agents.

Currently, he is still working at our car wash workshop for his psychosocial rehabilitation with considerable amount of income.

Discussion

Criminal offender holds the criminal responsibility if he does fulfil the *actus reus* and *mens rea*. Jurisdictions require evidence of both elements in order to secure a conviction. The *actus reus* is the criminal act whereas the *mens rea* defines the criminal intent which is the state of mind during the act [3]. To hold that a man is guilty of a criminal offence which he does not know what he is committing, is contrary to this fundamental principle.

Legal insanity in most jurisdictions is defined as state of mind which will lead to a verdict of “not guilty by reason of insanity” in any criminal offence [3]. According to English law, legal insanity was enunciated based on M'Naughton Rules; to establish a defence of insanity, “it must be clearly proved that at the time of committing the act, the party accused was labouring under such a defect of reason, from disease of the mind, as not to know the nature and quality of the act he was doing, or, if he did know it, that he did not know what he was doing was wrong” [3]. Statutory provision for insanity in Malaysian law is contained under section 84 of the Penal Code [4]. “Nothing is an offence which is done by a person who, at the time of doing it, by reason of unsoundness of mind, is incapable of knowing the nature of the act, or that what he is doing what is either wrong or contrary to law [4]. It can be seen clearly that the Penal Code uses the term “unsoundness of mind”, not “insanity” and it does not mean the same meaning [5]. No definition given in the Penal Code for “unsoundness of mind”, however Trivedi states “Unsoundness of mind is a state when the mind does not function properly. It may manifest in so many ways eg idiocy, lunacy, imbecility, delusions, derangements, fits etc” [5,6]. Unlike English law, Malaysian law does not include diminished responsibility which reduces the crime from murder to manslaughter [5].

In Malaysian Law, “Mental Disorder means any mental illness, arrested or incomplete development of the mind, psychiatric disorder

or any other disorder or disability of the mind however acquired; and “mentally disordered” shall be construed accordingly” [7]. This definition focuses the consequences of mental disorder on the person’s mind, rather than looking at the possible causes of the mental disorder [8]. The Mental Health Act (MHA) 2001 also defines the mentally disordered persons as “any person found by due course of law to be mentally disordered and incapable of managing himself and his affairs” [7,8]. Mental retardation does fulfil the description mentioned as mentally disorder person in the MHA 2001. Therefore, since the patient was diagnosed to have mental retardation, he was pleaded on the defence of unsoundness of mind under section 84 of the Penal Code and was sent for admission into psychiatric hospital for further management under section 348 CPC. The defence of unsoundness of mind due to the defect of reason in this patient had exempted him from his criminal liability since Malaysian law does not provide the plea of diminished responsibility for his offence of murder.

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Received: 4 February 2013

Accepted: 26 June 2013

CASE REPORT

WHEN DISORDERED EATING AND DISORDERED THINKING HAPPEN TOGETHER IN A YOUNG PERSON? A CASE REPORT

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Abstract

Objective: This case report highlights the complexity of eating disorder in schizophrenia and outlines the diagnostic dilemma and challenges associated with the treatment. **Methods:** We report a 13 years old female with early onset schizophrenia who developed anorexic symptoms and binge eating. Her eating disturbances worsened after olanzapine was commenced. **Results:** A combination of pharmacological and psychosocial intervention led to remission of schizophrenia co-morbid with eating disorder NOS. **Conclusion:** Co-morbid diagnosis of schizophrenia and eating disorder is not uncommon. Early diagnosis and evidence-based intervention are imperative as untreated illness greatly impacts the developmental trajectory of young people. Meeting family's needs improves family functioning which in turn improves patient's outcome. *ASEAN Journal of Psychiatry, Vol. 15 (1): January – June 2014: 101-105.*

Keywords: Schizophrenia, Eating Disorder, Comorbidity

Introduction

The coexistence of eating disorder in schizophrenia has been documented as early as in the days of Bleuler [1]. Over the past few decades, 25% to 36% of patients diagnosed to have eating disorder were also reported to have schizophrenia [2]. Lyketsos GC et al. (1985) observed that patients found to have schizophrenia fulfilled criteria for eating disorder more often than in the control group [3]. The comorbidity of schizophrenia and eating disorder represents the complexity of illness affecting brain function. The clinical implications are significant as the impact of inadequate nutrition on the course of the comorbid psychotic illness has effects on the efficacy of medication. Conversely patients' cognition during the state of poor health may also lead to refractory illness [4]. The comorbidity of schizophrenia and eating disorder is still little understood and there is a dearth of

research regarding this complex phenomenon [2,5].

Delay in recognizing illness and initiating treatment leads to definite negative consequences. But when the patient is still a young teenager with a rapidly developing brain, the impact is even more serious. Scientific evidence from longitudinal studies shows that both neuropathological and magnetic resonance imaging (MRI) findings indicate that neurodevelopment is ongoing throughout life, and that schizophrenia is due to aberrations in the neurodevelopmental processes [6].

Untreated illness has a serious negative impact on a young person's developmental trajectory, resulting in stunting of the bio-psycho-social growth. When a young person is too busy grappling with psychotic symptoms, causing neglect in the normal learning required to grow up, such as school and interpersonal relationship. Medication functions to reduce

these psychotic symptoms so the patient can be re-engaged in the real world and his neurons can focus on learning how to handle the realities of life. The process mediating these changes involves that of changing synaptic plasticity. This includes the cognitive, social and emotional learning required as he grows up to be an independent adult, able to function and handle the challenges of day to day living [7].

Caring for young people struggling with illness and growing up would inevitably affect the quality of life and emotional well being of their caregivers as well [8]. This is a case report on a Malaysian patient who had early onset schizophrenia with eating disorder not otherwise specified (NOS). The diagnostic dilemma, challenges in pharmacological and psychosocial interventions in this patient are addressed.

Case Report

A 13-years-old female student, an A student with perfectionist traits, presented with psychotic symptoms, namely delusion of reference, persecutory delusions, thought broadcasting and third person auditory hallucination of 6 months duration. These appeared to have been precipitated by her being accepted into a high ranking academic-oriented secondary school. She had difficulty in adapting to the new environment and classmates. She developed psychotic experiences. She was very disturbed by them. Her school performance deteriorated. She refused to go to school as she believed that her classmates and teacher had bad intention towards her. She also had depressive symptoms following that.

A diagnosis of schizophrenia was made based on DSM-IV-TR [9]. Risperidone was started but unfortunately the patient developed severe oculogyric crisis. Her medication was changed to olanzapine and titrated up to 10mg ON. Her psychotic and depressive symptoms improved, however, the oculogyric crisis still occurred occasionally.

A year prior to the onset of her psychotic illness she begun to become very concerned about her body weight and started dieting. From 44kg (BMI: 18.5 kg/m²), her weight

reduced by 7 kg over a year (BMI: 15.6 kg/m²). There was no history of taking slimming pills. However to cope with the emotional distress when she experienced psychotic symptoms, she started to binge. She had a sense of lack of control over eating during the episodes. This worsened after she was prescribed olanzapine as she gained weight and became more preoccupied with her weight. She restricted herself to only eating 500 calories per day by skipping meals and drank only water. These starvation efforts could last for a whole week. She also induced vomiting after meals especially after binge eating. She had body image distortion and felt that she was fat when she was actually underweight. Her eating disorder symptoms worsened as the content of her delusion and auditory hallucination became food related. She heard voices asking her to binge, followed by voices laughing at her being fat and believed her binge eating was partly due to the control of an external force. However she still had her menses regularly. Her parents failed to recognize that she was developing an eating disorder as both parents were concerned about weight gain with antipsychotic treatment. Her mother even suggested to the patient to induce vomiting when she complained of feeling full and uncomfortable. The parents had difficulty in their anger management. They also had communication problem and lack of understanding that teenagers need privacy and respect. This is evidenced by her mother often reading the patient's diary secretly. The patient also had poor impulse control. When she did not achieve her own high expectations in her homework, she became irritable and aggressive towards her mother. However since she was diagnosed to have mental illness, the family was more loving and her parents were more patient with her.

Mental state examination on the first contact revealed that she had poor eye contact and only superficial rapport was achieved. She reported feeling fearful and sad but her affect was blunted. She also had poverty of speech, persecutory delusions and delusions of reference. Her judgment and insight were poor. Physical examination revealed an underweight adolescent with BMI of 16.8 kg/m² (weight: 41.3kg). Abrasions on her knuckles, which caused by self-induced vomiting (Russell's sign) were noted during her subsequent follow

up. Otherwise, her secondary sexual characteristics were fully developed and other systemic reviews were unremarkable. Blood investigations were within acceptable limits.

In view of the oculogyric crisis still persisted and her binge eating had increased in frequency after commencement of olanzapine, her antipsychotic was changed to quetiapine, which was titrated up to 400mg ON gradually without side effects. Therapeutic alliance was established with the patient and parents. Family dynamics were explored. The parents were gradually empowered to become co-therapists after being given psychoeducation regarding schizophrenia with comorbid eating disorder and trained on positive parenting skills and skills on adaptive anger management. Eating meals together as a family was encouraged. At the same time, patient was motivated to gain a healthy weight and to cultivate a healthy dietary habit to avoid complications which could potentially affect her future development and achievement. Healthy coping skills in dealing with her distressed emotion were discussed. Her residual delusions and automatic thoughts were dealt with through cognitive behavioral therapy. She achieved remission in her psychotic and eating disorder symptoms after a year of pharmacological and psycho-social treatment. Despite one and the half year of not schooling, she was enrolled in a course on digital animation in a local vocational college, in her pursuit of ambition to become an animator.

Discussion

Diagnostic dilemma emerges when a patient who is diagnosed to have schizophrenia presents with symptoms of eating disorder. Questions that arise are whether these symptoms are part of the schizophrenia spectrum or a different clinical entity. There are a few theories to explain the association of eating disorder symptoms and psychosis. Firstly, food refusal could be a response towards the underlying delusion of poisoning, persecution or hallucination related to eating [3]. Secondly, anorexic symptoms could be a phenotype of cognitive impairment, i.e. distorted perceptions of eating and body image in schizophrenia [10]. Thirdly, binge eating can be a defense against psychosis [11,12].

Eating disturbances in patients with schizophrenia appear to be a means of coping, i.e. to organize their life and give them a sense of identity when their ego boundaries are lost [13].

This patient was preoccupied with calories in food and other obsessions commonly seen in anorexia nervosa (AN) patients but rarely seen in those with schizophrenia [3]. Her quality of life was also impaired by her worsening of eating disorder symptoms despite the improvement in her psychosis. In addition, her eating disturbance was potentially becoming full-blown AN without early intervention, generating greater complications in an adolescent [14]. Therefore, a formal diagnosis of schizophrenia with comorbid eating disorder NOS according to the DSM-IV-TR were made, so that the patient and her family also address the impairment caused by the eating disorder.

Olanzapine was shown to have efficacy as a treatment of early onset schizophrenia [15]. It also has some benefits in terms of weight gain and improvement in obsessive symptoms in patients with eating disorders [16,17]. However, a study demonstrated that olanzapine caused more prevalent and severe extrapyramidal effects in youth than adults [18]. Moreover, studies demonstrated that olanzapine may induce recurrence or deterioration of binge eating in patients with prior eating disorders [19,20]. Therefore, her antipsychotic was changed to quetiapine as she had oculogyric crisis and worsening of binge eating with olanzapine. In addition, one small open-label study showed that quetiapine used in anorexia nervosa patients resulted in psychological and physical improvements with minimal side-effects [21].

Psychosocial interventions which involve the family are especially important in successful management of both schizophrenia and eating disorder in this 13-year-old. This is because a young adolescent is very dependent on her family to meet her needs. Thus, the caregivers' burden will be higher and early detection of unmet needs is necessary to prevent burn out [8]. Upon improvement of parenting skills and anger management of both parents, family functioning improved. This is known to be associated with better outcome in adolescents

with AN [22]. Cognitive behavioral therapy is also known to improve schizophrenia or eating disorder symptoms [23] as shown in this patient. A comprehensive, customized and evidence-based approach is essential in achieving better outcome in managing a comorbid diagnosis.

Conflict of Interest: None.

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Received: 18 January 2013

Accepted: 5 August 2013

OPINION

FUTURE ROLE FOR MOTIVATIONAL INTERVIEWING IN THE TREATMENT OF INSOMNIA - AN OPINION

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Abstract

Objective: This paper aims to explore the possibility of using motivational interviewing (MI) as a therapy for insomnia patients. **Methods:** We reviewed the current practice guidelines for insomnia, and noted the issues pertaining to types of treatment, notably CBT-I. We also reviewed some studies which seem to suggest that MI treats insomnia. **Results:** MI is a proven technique for other psychiatric illnesses. There are currently not many studies done evaluating the efficacy of MI on insomnia. Of those published studies, they are either underpowered to draw any firm conclusions, or it is limited to a particular age group. **Conclusion:** There seems to be promise in the area of MI on insomnia. Given the paucity of data in this area, more research with bigger group of study participants are needed to fully conclude the effectiveness of this treatment. *ASEAN Journal of Psychiatry, Vol. 15 (1): January – June 2014: 106-112.*

Keywords: Motivational Interviewing, Insomnia

Introduction

Insomnia is the difficulty initiating or maintaining sleep, and it is one of the most common sleep problems in the general population. Poor sleep may affect one's quality of life and day to day functioning due to fatigue and irritability. The cause of insomnia may be multifactorial in nature, ranging from anxiety, depression, and drug abuse to medical causes such as central nervous lesions and infectious/neoplastic factors. The prevalence of insomnia has been reported in Asian countries. A survey of the South Korean general population showed that insomnia symptoms at least three nights per week were reported by 17% of those surveyed [1]. Li *et al* observed the first large-scale cross-sectional study on insomnia among Chinese adults in Hong Kong. Overall, 11.9% of Hong Kong Chinese adults reported suffering from frequent insomnia (at least 3 times per week) for the preceding month with

more female insomnia sufferers than male (14.0% vs. 9.3%) [2]. Locally in Singapore, a survey of 612 elderly people in the community indicated that about 25% had sleep difficulties but only 19% had physical or psychological problems related to insomnia [3]. The average cost annually of insomnia in the United States was reported to be around \$92.5 and \$107.5 billion dollars, which included the costs of comorbid medical and psychiatric treatment and medications, and decrease in individual economic productivity [4].

With rising trends of patients suffering from insomnia, there has also been a recent increase of numbers of errant physicians in Singapore who inappropriately prescribe benzodiazepines to insomniacs. A total of 42 physicians had been dealt by the Singapore Medical Council (SMC) from 2007 to 2010 with regards to this issue. The current guidelines for benzodiazepine prescription for insomnia by SMC are: judiciously prescribe a short course

of hypnotic medication (e.g. benzodiazepine), up to 2 to 4 weeks for relief of insomnia symptoms after considering non pharmacological treatments [5]. With current trends of patient abuse of benzodiazepines and tightening of guidelines on prescription of benzodiazepines, there should be a greater need to consider utilization of various psychotherapies for management of insomnia.

Motivational Interviewing

Motivational interviewing (MI) is a directive, client centered counselling style for eliciting behaviour change by helping clients to explore and resolve ambivalence [6]. Rollnick and Miller stresses the importance of keeping the spirit of MI which can be characterized in a few key points as such: (i) motivation to change is elicited from the client (ii) it's the client's task to articulate and resolve his ambivalence (iii) direct persuasion is not an effective method for resolving ambivalence (iv) the counselling style is generally a quiet and eliciting one (v) the counselor is directive in helping the client to examine and resolve ambivalence (vi) readiness to change is not a client trait, but a fluctuating product of interpersonal interaction (vii) the therapeutic relationship is more like a partnership or companionship than expert/recipient roles [6].

The Four Guiding Principles

MI is guided by four key principles [7]. (i) Therapists should *express empathy* towards the client, to better see the situation from their perspective. This better provides the client to be better understood and in turn they would be more willing to share their situation in depth with the therapist. (ii) Therapists should also support *self-efficacy* from the patient, and continually encourage the client that he has the capability to instil change by himself. Therapist can do so by reframing the client's attitudes and beliefs from past failures to change, and highlight previous successes and strengths that the clients already possess. (iii) It is also important for therapists to *develop discrepancy* by examining the patient's ideals and self-identified goals with the client's current behaviour. When clients realize the magnitude of difference between the two, they will develop the motivation for the change in their behaviour. (iv) "Rolling with resistance"

is a principle therapists adopt, when clients resist changes. The therapist "rolls along" with client's thoughts and encourages them to take on new perspectives without confronting and strictly enforcing change on them. In this way, the client is still able to have autonomy over his own thoughts, thus increasing motivation for change.

Current Uses of Motivational Interviewing

MI is well known for its uses in addictive behaviours, mainly in alcohol abuse. In a meta-analysis by Hettema *et al* [8], MI was seldom given alone, but was typically combined with feedback and often with other forms of treatment. MI was normally combined with other interventions such as education, self-help manuals, relapse prevention, cognitive therapy, skills training, Alcoholics Anonymous, stress management, and treatment as usual for the particular setting [8]. Hettema *et al.* also suggests that MI may be more effective when clinicians and patients are not matched on the basis of racial, ethnic, or cultural characteristics [8]. Another meta-analysis done for the efficacy of using MI for excessive drinking versus no treatment at all [9]. Results showed that MI is effective as a treatment, indicated by the reduced number of standard drinks per week and number of heavy drinking days post therapy. They also found that MI was more superior than skill based counselling among individuals who were not ready to change [9]. An additional study on excessive drinking also showed that patients who received pre-treatment MI are more motivated to change their behaviour and more adherent to the treatment program instituted for them, thus having a better prognosis [10].

More recently, MI has been used for psychotherapeutic treatment for other non-psychiatric related conditions. MI had been tested in the context of promoting health behaviours for health promotion [11]. This technique has been applied in Zambia, Africa, enhancing villagers to adopt water disinfection practices and it has been quite successful [12]. Another study done to help improve the consumption of fruits and vegetables and physical exercise in individuals attending Black churches across America using MI over the course of one year revealed that MI had an addictive effect in the group taking fruits and

vegetables, but not the group doing physical exercise [13]. Picciano *et al.* used a randomized control design comparing MI with HIV education to a control group (HIV education only) for men identified as high risk for infection. Participant motivation and behavioural skills to practise safer sex improved in both groups of participants [14].

Current Treatments Used For Insomnia

Treatment for insomnia is considered to be one of the more challenging problems in sleep disorders. Treatment approaches for insomnia are primarily: (i) acknowledge distress (ii) treat any precipitating or primary cause if possible (iii) educate about trigger factors for sleep and reassure that sleep will improve (iv) establish good sleep habits (v) consider hypnotic medication [15].

Hypnotics. First line therapy would normally consist of antihistamines (i.e. hydroxyzine) and noradrenergic and specific serotonergic antidepressants (i.e. mirtazapine). Newer drugs in the market that target melatonin receptors [15] and regulate sleep wake cycles are also currently available (i.e. Agomelatine). Drugs like zolpidem and zolpiclone are benzodiazepine like drugs that are used as a second line therapy. Benzodiazepines (i.e. lorazepam, midazolam) should be judiciously used and not more than 2 weeks as per guidelines mentioned above, as there is a risk of tolerance and withdrawal symptoms may result.

Behaviour Therapy. Stimulus control (sleep hygiene) can be instituted in the patient, for example arising at the same time daily, avoidance of evening stimulation, and avoiding day time naps [16] may help to strengthen association in the mind between being in bed and being awake [15]. Relaxation therapy can be taught to the patient for utilization before going to bed. It usually involves the patient relaxing every major muscle group in the body starting from the face downwards. Studies have shown that relaxation technique has helped to improve measures of sleep, however not day time function [17].

Cognitive Behavioural Therapy for Insomnia. CBT-I is cited as the behavioural

treatment of choice for patients with insomnia, as up to 80% of patients who receive such therapy show treatment response [18]. A meta-analysis done for CBT-I on patients revealed that it helped in improvement of subjective sleep quality, and decreased subjective wake time during the night [19]. Studies also show that with CBT-I, there is an average reduction of about 50-60% in sleep latency, and wake-after-sleep onset [20]. These studies also established that after CBT-I treatment, patients had an increase of about 30-45 minutes of total sleep time. A meta-analysis of 21 studies done by Smith *et al.* (2002) comparing treatment efficacies between pharmacotherapy and behaviour for insomniacs revealed no differences in magnitude between pharmacological and behavioural treatments in any measures except latency to sleep onset, and overall behaviour therapy and pharmacotherapy produced similar short term outcomes in primary insomnia [21].

However there are certain treatment issues regarding the use of CBT-I on patients, notably the relatively high drop-out rates from treatment leading to persistent problems of insomnia for patients. Some studies reported that patient has early termination rates of CBT-I of up to 9.7% for group CBT-I [22] and 30.3% to 38.8% in individual CBT-I [23] of which minimum adequate dose of treatment was defined as at least attending four sessions of CBT-I. There is currently very little data known about possible risk factors that predict patient dropout [23].

Why is Motivational Interviewing useful for patients with insomnia?

In the process of MI it assumes that the patient experiences ambivalence during the change process [24]. According to Marino, most people with insomnia display a reasonable amount of situational ambivalence [24]. Thus the use of MI may target self-efficacy as a method for decreasing ambivalence [24]. However there is currently limited research being done on the efficacy of MI for insomnia.

In 2008, Marino did a randomised control pilot study of using MI to promote adherence to CBT-I therapy for insomniacs [24]. Results showed that 5 out of 10 participants in the MI group and 1 out of 8 participants from the

control group attended at least 1 group CBT-I session. However results were not statistically significant and this study was severely underpowered to draw any firm conclusions.

Naralie *et al.* in 2011 performed a motivational school-based intervention for adolescent insomnia in a local school in Australia [25]. Students in the intervention group were reported to be more motivated to regularize their out-of-bed times, and there was a trend towards improved motivation to increase average total sleep time [25].

Given the paucity of data for the use of MI for insomnia management, and knowing the potential of MI use in this condition, it is

pertinent that more research should be conducted in this aspect. Possible example of an exchange between client and therapist using MI was given in Appendix A.

Behaviour Change Plan

After the session of MI with the therapist has been administered, to further reinforce plans and strategies to counter insomnia, a sleep behaviour change plan would be developed by the patient with guidance from the therapist. It has been initially recommended for adolescent patients who are considering making an imminent change in their behaviour[26]. The following components are an example of a typical behaviour change plan [26].

1. The changes I want to make are:
2. The most important reasons to make these changes are:
3. The specific steps I plan to make in changing are:
4. Some people who can support me are:
5. They can help me by:
6. I will know my plan is working when:
7. Things that could interfere with my plan (barriers) and possible solutions include:

Conclusion

MI has seen its share of success in the treatment of psychiatric and non-psychiatric illnesses. It may be worthwhile to explore MI as a possible solution to the challenges faced in the treatment of persons with insomnia. Current research results are promising but we are still unable to make any conclusions to the effectiveness of this approach to treatment. Thus it is important to have more research done in this aspect of management for patients with insomnia.

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Received: 6 July 2013

Accepted: 19 August 2013

Appendix A: Possible Example of an Exchange between Client and Therapist Using Motivational Interviewing

C (Clinician): Hi Sharon, how have things been for you since our session 2 weeks ago? (Open ended questioning)

P (Patient): Not so good... I tried getting to bed earlier but it hasn't been easy...

C: Although I hear that nothing really worked out for you last week, the very fact that you came down today shows that you are still motivated to change your behaviour. (Affirmation) Could you tell me more about the challenges you have been facing getting to bed earlier? (Open ended questioning)

P: Well I have really tried but I can't help feeling it's a waste going to bed by 10pm! After all, I'm at my most productive in the evenings. Even if I do try to get to bed early I end up tossing and turning and just worrying about all the things I haven't finished. So I just sit in bed and start reading and watching TV till I feel sleepy which takes really long! However, there was one night when I managed to get to bed by 10.30pm.

C: It seems that you have really tried your best to have an earlier bedtime but it is quite challenging to do so, leaving you feeling frustrated. (Reflective listening)

P: Exactly! It is frustrating!

C: A lot of our patients share that making the changes can be challenging at first. (Normalizing) Would it be alright for us to talk more about your bedtime? (Asking Permission)

P: Sure.

C: What do you see as the 'good things' about staying up late at night? (Open Ended Questioning)

P: I usually have to stay back to finish up my work so by the time I return home, I like having some 'downtime' to do what I like watching TV dramas, catching up with friends on Facebook and surfing the net. Sometimes though, I do lose track of time.

C: I'm hearing that the evenings are when you try to catch up with friends and what you enjoy. I'm wondering what would happen if having a later bedtime persists? (Eliciting Change Talk)

P: I think things might start getting worse. As it is, when I get to work, the first half of the day goes very slowly.

C: What does your day going very slowly mean? (Clarifying)

P: I feel so tired from not having enough sleep that the first half of the day at work is spent trying to wake up. I end up drinking a few cups of coffee to help me stay awake. It takes me longer to finish my work so I don't have much choice but to stay back late after the rest have left.

C: It sounds like on the one hand, you enjoy staying up late as that is the time you catch with friends and shows you enjoy, while on the other hand, staying up late makes functioning at work the next morning a bit difficult for you. (Developing Discrepancy)

P: Actually it's not just a bit difficult but really difficult.

C: It may not have started off as being a problem but it is starting to create more difficulties for you. (Reflective Listening)

P: It seems like a cycle, staying up late and not being able function well at work in the morning, then staying back late to catch up on work...

C: You feel that there is a connection between staying up late and how well you function at work the next day.

P: Seems like it.

C: On a scale of 0 to 10 where 10 is the most important, what number would you give for how important it is to change your bedtime? (Readiness to Change Ruler)

P: Looks like a 7.5 to me.

C: Could you explain why you are at a 7.5 instead of a 5? (Readiness to Change Ruler)

P: Maybe if I was younger and could cope with less sleep it would be alright for me. But age is catching up and getting to bed on time so feeling refreshed the next day means a lot to me.

C: What might happen that could move you from a 7.5 to perhaps a 9? (Readiness to Change Ruler)

P: I guess getting a warning letter from my boss for not being keeping to my deadlines at work.

C: From what you have said so far, what keeps you from getting to bed earlier is that evenings and nights appear to be a good time to catch up on what you like doing such as chit chatting with your friends online and watching your favourite shows. However finding ways to get to bed earlier is important for you as it seems to be having some negative consequences at work such as reduced concentration, fatigue and even having to stay on after office hours to finish your work. (Summarize)

P: I'm not sure what I can do though.

C: You mentioned earlier that you managed to get to bed on one night at 10.30pm. That's a great start! How did you manage to do it? (Support Self Efficacy)

P: I had my last coffee at around 2pm. And also, since I was quite tired by around 10pm, I decided to reply to my friend's emails the next day.

C: That's a great start, how did you feel about it? (Support Self Efficacy)

P: Woke up the next day feeling refreshed and actually managed to get a lot more done during office hours.

C: Would it be alright for me to share some other strategies? These strategies were shared by other patients who found them helpful in managing their bed time better. (Asking Permission)

P: There might be something others have tried that might work for me.

C: For a start, we would want to have a look at limiting the level of stimulation you have before bed time. Having activities that help you to mentally wind down such as relaxation exercises instead of watching TV dramas may help you to relax your mind just before bed time. What do you think of my suggestion? (Advice/Feedback)

P: I could try them.

C: Let's spend some time working out a plan to see how we can start using some of these strategies.

EDUCATION SECTION

MODEL ANSWERS FOR A CRITICAL REVIEW PAPER: CONJOINT EXAMINATION FOR MALAYSIAN MASTER OF MEDICINE (PSYCHIATRY) AND MASTER OF PSYCHOLOGICAL MEDICINE FOR NOVEMBER 2013

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Abstract

Objective: This paper aims to guide the postgraduate students to answer a Review Paper based on the May 2013 Examination for the Malaysian Master of Medicine (Psychiatry). The paper studied the Validity of a short clinical interview for psychiatric diagnosis: The mini-SCAN. **Methods:** One of the papers from the final postgraduate exam in November 2013 was selected to exemplify the requisite for students' critical appraisal skill in the examination. **Results:** Model answers were provided at the end of the Critical Review Paper. **Conclusion:** This review paper provides the postgraduate students an essential understanding and critical thinking on the topic of Validity of a short clinical interview for psychiatric diagnosis. This paper may serve as a guideline to teach students on how to critically appraise topic related to psychiatry. *ASEAN Journal of Psychiatry, Vol. 15 (1): January – June 2014: 113-116.*

Keywords: Critical Review, Psychiatric Postgraduate Examination, Model Answer

TITLE OF PAPER: Validity of a short clinical interview for psychiatric diagnosis: The mini-SCAN, by F. J. Nienhuis, G. van de Willige, C. A. Th. Rijnders, P. de Jonge and D. Wiersma *BJP* 2010, 196:64-68.

The Schedules for Clinical Assessment in Neuropsychiatry (SCAN) is a semi-structured psychiatric interview. To promote clinical application of the Schedules for Clinical Assessment in Neuropsychiatry (SCAN) system a shorter version (the mini-SCAN) was devised. Its psychometric properties were unknown. Objective of this paper is to establish the validity and practical properties of the mini-SCAN. **Methods section:** One hundred and six participants were interviewed

twice, once with the SCAN and once with the mini-SCAN. They were interviewed within a week with a minimum of a 2-day interval. Individuals were not made aware of the outcome by the interviewer. After completion of both interviews the diagnosis (if any) was communicated with the attending psychiatrist or resident, who could discuss the outcome with the participant. Interviews were administered by very experienced and well trained clinical psychologists and training psychiatrists. The level of agreement was established for the categories: no disorder, affective disorders, anxiety disorders, non-affective psychotic disorders, affective psychotic disorders.

Results

Table 1 Prevalence of diagnostic classes according to the Schedules for Clinical Assessment in Neuropsychiatry (SCAN) and mini-SCAN in the sample ($n = 106$)

Diagnostic class	n (%)	
	SCAN	mini-SCAN
No disorder	15 (14)	15 (14)
Affective disorder	30 (28)	32 (30)
Affective psychosis	12 (11)	11 (10)
Anxiety disorder	34 (32)	33 (31)
Non-affective psychosis	15 (14)	15 (14)

The sensitivity, specificity and positive and negative predictive value were calculated using the SCAN as gold standard. Mean duration of the mini-SCAN interviews was 25

minutes shorter than the SCAN interviews. Participants and interviewers were generally satisfied with the interview format and questions.

QUESTIONS *(Answers were given, after the dotted line)*

- Based on Table 2, which diagnostic categories had the highest prevalence rate? (1 mark)

.....

Anxiety disorder

- Name two other types of validity that was not measured in this study? (2 marks)

(i)

(ii)

Factorial validity
 Cross validity
 Predictive validity
 Criterion validity
 Face validity

- Define sensitivity and specificity? (2 marks)

(i) Sensitivity

.....

(ii) Specificity

.....

- (iii) Sensitivity – the proportion of people of who have the disorder who are correctly identified as positive by test. It is the ability to make a true diagnosis, which in this case, is based on the SCAN diagnosis.
- (iv) Specificity - the measure for identifying a true non-case. It is the ability to exclude a true negative, which is based on the SCAN diagnosis.

Table 2.

Mini-SCAN (Affective disorder)	SCAN (Affective disorder)	
	Cases (+)	Non-Cases (-)
Cases (+)	28	4
Non-cases (-)	2	30

4. Based on the above 2 x 2 Table, in the context of affective disorder domain of new scale

- (i) What is the true positive (TP)? (1 mark)

.....
 = 28

- (ii) What is the false negative (FN)? (1 mark)

.....
 = 2

- (iii) Calculate the true positive rate (TPR). [Please show your calculation flow-chart] (2 marks)

.....

 TPR = sensitivity = TP / (TP + FN) = 28/(28 + 2) = 28/30 = 93.3%

- (iv) Calculate the specificity of the new scale. [Please show your calculation flow-chart] (2 marks)

.....

 TNR = specificity = TN/(FP + TN) = 30/(30 + 4) = 30/34 = 88.2%

- (v) Define positive predictive value (PPV). (2 marks)

.....

 The proportion of positive test results that are true positives (such as correct diagnosis)

- (vi) Calculate the PPV. [Please show your calculation flow-chart] (2 marks)

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.....
.....

$$\text{PPV} = \text{TP}/(\text{TP} + \text{FP}) = 28/(28 + 4) = 28/32 = 87.5\%$$

- (vii) Does the new rating scale have a good concurrent validity?

[Yes, No: Please circle the answer](1 mark) Give the reasons. (2 marks)

.....
.....
.....

Yes. There is good correlation between the tested scales with another validated scale.

5. State two benefits of Mini-SCAN use in primary care unit. (2 marks)

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- a. Short
- b. Reliable
- c. Valid

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Received: 1 October 2013

Accepted: 6 November 2013