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EDITORIAL

Intervention for Depression in Medically Ill Patients

Zainal NZ
Editor-in Chief, MJP

Prevalence of depression in medically ill patients is 3-4 folds higher than the general population. Clinical depression affects 20%-30% of patients with chronic diseases. Unfortunately, physicians commonly have difficulties detecting depression in medically ill patients. Symptoms such as tiredness or fatigue, poor appetite, loss of weight and frequent disturbed sleep are common clinical presentation of a physically sick person. Being depressed could have been accepted as a normal reaction to medical illness. As a result, the patient may have been left alone to deal with their own emotional turmoil.

Undetected depression could worsen the patient’s general well-being, quality of life, poor self-care and compliance to treatment for physical illness that may lead to either poor outcome of illness or even increase the morbidity and mortality. In a busy general hospital set-up or out-patient clinic especially in Malaysia, perhaps doctors prefer a simple and short screening tool to help them to detect depression. Self-report screening tools such as Hospital Anxiety and Depression Scale (HADS), Patient Health Questionnaire (PHQ), Zung Depression Scale and Beck Depression Inventory (BDI) are common depression scales used in psychiatric research. However each of these scales needs to be validated first for the local population and some effort has been given to it.

Treatment of depression in medically ill patients is either pharmacotherapy or psychotherapy or both depending on the severity. Antidepressants have been shown to be significantly superior to placebo in treating depression in medical illness. One has to be careful when choosing the antidepressant depending on its side effects. The second-generation antidepressants are said to be safe and less drug-drug interactions to be used in medically ills. However, in general, it is advised to go slow and low dose to start the antidepressant.

Patients with multiple medical illnesses and depression have high health-care cost. It is known that integrating mental health care into the management of such patients can improve the outcome. The psychological interventions of depression in medically ill patients may be effective and cost-effective. However, developing this model in the health care system is challenging. It needs training and supervision of all levels of ‘carers’ such as the nurses, nurse specialists, medical officers, clinical specialists and consultants to be able to detect depression, offering simple counselling and start the antidepressant. Our policy makers in the government need information on the relative cost, benefits and cost effectiveness in order to implement new intervention. We need audits and more research to look at the cost-effectiveness of psychological interventions in the medically ill patients. Perhaps the health economists can assist the decision makers in this country to look at the health-care cost.
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3. Lua PL and Wong SY. The Reliability of the Malay Versions of Hospital Anxiety Depression Scale (HADS) and McGill Quality of Life Questionnaire (MQOL) among a Group of Patients with Cancer in Malaysia. MJP 2012; 21(1):25-37.


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Reliability and Validity of the Chinese Translation of Insomnia Severity Index and Comparison with Pittsburgh Sleep Quality Index

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Abstract

Background: Insomnia as a symptom can be accompany with many psychological disorders and as a disorder is very common in our clinics. Besides insomnia severity, Index (ISI) is a simple and practical measurement to briefly screen patients with insomnia in clinics and also is a tool to easily assess treatment outcome in research. We aim to determine the reliability and validity of Chinese Translation of Insomnia Severity Index (C-ISI) in patients with Insomnia and compare it with Chinese version of Pittsburgh Sleep Quality Index (C-PSQI). Methods: English version of ISI was translated into Chinese based on standard guidelines then C-ISI was filled in 83 patients with insomnia (clinical group) and 45 persons without sleep complain (as the control group) by themselves. For finding Test-Retest reliability, they refilled ISI questionnaire 2 weeks later. Results: Cronbach’s α coefficient of C-ISI for the clinical group was 0.72, for control groups was 0.75 and for both of them was 0.91. The C-ISI component and total scores in the test were significantly correlated with their related components and total scores in re-test (P < 0.05). Mean Ranks for All C-ISI components, total score were significantly higher in the clinical group than the control group. There are Significant correlations between C-ISI component and total scores and C-PSQI components and Total scores in related Items. Conclusions: C-ISI is an adequate scale with acceptable reliability and validity and it can evaluate sleep quality in patients with insomnia similar to the PSQI-C so C-ISI can be used as a good scale to measure sleep quality in Chinese speakers.

Keywords: Insomnia, Insomnia Severity Index, Chinese

Introduction

The Insomnia Severity Index (ISI) is a questionnaire with 7-self rated items that was originally used by Charles M Morin (1993) and Morin & Espie (2003) to briefly screen patients with insomnia in clinics and also is a tool to easily evaluate treatment
outcome in research. These items measure patient’s perception of sleep problems and also show the severity of insomnia\textsuperscript{1}. There are some researches that have approved reliability and validity of ISI as an acceptable questionnaire in insomnia\textsuperscript{2,3}. Morin and colleagues determined 0.74 as an internal consistency of the ISI in a group of insomnia patients (n=145) who came to sleep clinic. They also treated a second group of older insomnia patients (n=78) with cognitive-behavioral therapy, pharmacotherapy, both or drug placebo and used ISI before intervention, post treatment and at follow-up visits (till 24months) after treatment that Cronbach alpha were 0.76, 0.77 and 0.78 respectively. Item-total correlations were acceptable. Validity in this group was also assessed by sleep diary data and polysomnographic variable. Sleep diary data at pretreatment and post treatment and polysomnographic variable at post treatment had significant correlations with sleep latency, waking up early, sleep efficiency\textsuperscript{1}. The ISI not only is very simple test and can be filled without any training but also is reliable and sensitive scale so it has been translated to many languages such as Arabic, Indian, Spanish\textsuperscript{2-5} and a Chinese version of the ISI(C-ISI) can help Chinese practitioners and researchers to have a simple and standard questionnaire to assess the patient’s sleep quality\textsuperscript{5-7}.

PSQI is a common questionnaire and a good instrument to assess the quality of sleep in practice and research\textsuperscript{8}. It was originally written by Buysse et al and was translated in several languages and was used by many researchers and practitioners\textsuperscript{8-11}. Many researchers and clinician are familiar with PSQI and use it as a standard tool to evaluate sleep disorders\textsuperscript{8}.

**Hypothesis**

In this study, we want to determine internal reliability of the Chinese translation of ISI (C-ISI), Test-retest reliability, concurrent validity in clinical and non-clinical samples, convergent and discriminant validities of the C-ISI Items with PSQI components. Specifically, we hypothesize that C-ISI is an adequate scale with acceptable reliability, C-ISI components and global score have a good sensitivity for insomnia patients and C-ISI can evaluate the insomnia patients similar to the PSQI-C. In this research, we tried to provide a Chinese version of ISI as a standard questionnaire to assess the patient’s sleep quality for many Chinese speakers around the world.

**Methods**

From February 1th, 2009 to January 1th, 2010 a cross-sectional study was done in clinics of Dongzhimen hospital in two groups (clinical group and control group) who satisfied to take part in this study and their age were between 18 and 65 years old. Clinical group consists of every person with difficulty of sleep that has Diagnostic Criteria for Insomnia (ICSD-2) confirmed by a medical doctor and total score of PSQI more than 5. Control group was healthy persons who hadn’t any subjective sleep problems in recent three months and during the study and their PSQI total score was less than 5. Both groups had Chinese nationality and were fluent in Chinese language and were able to communicate verbal and read Chinese to fill forms by themselves.

**Measures**

ISI questionnaire was translated to Chinese language after passing a standard procedure (that has been explained in procedures) and was called C-ISI. ISI has 7 items to evaluate
three subtype of insomnia (difficulty falling asleep, sleep maintenance, waking up early morning), daytime dysfunction due to sleep problem as reported by the patient and by others and worry/distress due to difficulty in sleep during last 14 days [Table 1]. Each item rated on a 5-point Likert scale of severity (ranging from 0 to 4). Scores of 7 items are added yield a total score (ranging from 0 to 28) to know the severity of insomnia. If the total score is 7 or less, it explains NO clinically significant Insomnia, score of 8-14 means subclinical Insomnia, score of 15-21 describes Moderate Insomnia and score of 22-28 shows Sever Insomnia.

The PSQI is a sleep quality questionnaire that has used in clinics and many researches for Chinese speakers. It has 10 items and seven clinically components to assess the quality of sleep during the last month [Table 1]. Its components are duration of sleep, sleep disturbance, sleep latency, day dysfunction due to sleepiness, sleep efficacy, overall sleep quality, need sedative drugs. The summation of these components produces total score. Total score more than 5 means insomnia that can be 28 at maximum.

### Table 1. ISI components, global score and PSQI components, global score

<table>
<thead>
<tr>
<th>ISI components</th>
<th>PSQI components</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Difficulty falling asleep</td>
<td>1. Sleep latency</td>
</tr>
<tr>
<td>2. Sleep maintenance</td>
<td>2. Duration of sleep</td>
</tr>
<tr>
<td>3. Waking up early morning</td>
<td>3. Sleep disturbance</td>
</tr>
<tr>
<td>4. Daytime dysfunction due to sleep problem</td>
<td>4. Day dysfunction due to sleepiness</td>
</tr>
<tr>
<td>5. Daytime dysfunction due to sleep problem</td>
<td>5. Sleep efficacy</td>
</tr>
<tr>
<td>as reported by others</td>
<td></td>
</tr>
<tr>
<td>6. Worry/distress due to difficulty in sleep</td>
<td>6. Overall sleep quality</td>
</tr>
<tr>
<td>7. Total score</td>
<td>7. Need sedative drugs.</td>
</tr>
<tr>
<td>8. Total score</td>
<td></td>
</tr>
</tbody>
</table>

### Procedure

This study was designed in 2008 and after approving it by Dongzhimen Experts review board from February 1th, 2009 study was started by researchers’ principals’ base on the outline by the Declaration of Helsinki. First English version of ISI questionnaire was translated to Chinese language by 2 bilingual translators whose mother language was Chinese to produce the two independent translations. Translator 1 was a medical doctor with a clinical background. Translator 2 was “naive” to produce a pure translation. Each translator prepared a written report to explain all difficulties that had in translation and remaining difficulties. Then they had a meeting to consult with each other and write a Chinese version. 2 other translators who were blind to source version, translated the Chinese version back into the English language to know that the Chinese version can reflect the same item content as the English one. Chinese version was reviewed by all translators and a language expert and 2 clinicians to prepare a pre-final version then this version was tested in 30 persons by a medical doctor. the meaning of each item was interviewed in patients with insomnia who had come to outpatient clinic in Dongzhimen hospital to find missing items and determine content.
validity of C-ISI. After preparing Final Chinese translation of ISI (C-ISI) and finding samples by advertisement (that was reviewed by the institutional review board), participating persons in research filled satisfied form before enrollment. Every person in two groups (clinical and control group) filled C-ISI and C-PSQI questionnaires by themselves and for finding TEST-RETEST reliability they again refilled C-ISI questionnaire 2 weeks later. Filled Forms were collected by two students who did not have any background in filling these questionnaires. There was no any new intervention in two groups during research.

Data Analysis

In this study, Data from questionnaires that were filled completely were entered by a student and analyzed by using SPSS 12.0 (copy NO. 5038707, SPSS Inc., 2006). Internal consistency of C-ISI with Cronbach’s-α and test-retest reliability within the Spearman-Brown coefficient were determined in clinical and control groups separately and both of them. Divergent validity between clinical and control groups was computed by Mann Whitney test for C-ISI components and total score. To measure convergent validity for the clinical group, Spearman-Brown correlation coefficients between C-ISI components and total score and C-PSQI components and total score were computed, with Bonferroni correction for multiple comparisons.

Results

74 (from 83) samples in the clinical group and 38 (from 45) sample of the control group finished this study. Mean age (SD) of the clinical group was 36.91 ± 11.65 (53 females and 21 males), and for the control group was 38.03 ± 13.58 (29 females and 9 males). Cronbach-α coefficient for the clinical group was 0.72 and for control groups was 0.75 and for both of them was 0.91.

Table 2 presents spearman correlation coefficients between C-ISI component and total scores (P < 0.05). The C-ISI component and total scores in the test were significantly correlated with their related components and total scores in re-test.

<table>
<thead>
<tr>
<th>TEST-RETEST ITEM</th>
<th>CORRELATION COEFFICIENT</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Difficulty falling sleep</td>
<td>0.945</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Sleep maintenance</td>
<td>0.941</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Waking up early morning</td>
<td>0.921</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>daytime dysfunction due to sleep problem (reported by person)</td>
<td>0.940</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>daytime dysfunction due to sleep problem (reported by others)</td>
<td>0.913</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>worry/distress due to difficulty in sleep</td>
<td>0.873</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Total score</td>
<td>0.944</td>
<td>&lt;0.01</td>
</tr>
</tbody>
</table>
Mann Whitney test for comparison of C-ISI components, Total score (means Rank) between clinical and control groups has been showed in Table 3. Mean Ranks for All C-ISI components, total score were significantly higher in the clinical group that presents poor sleep quality in the clinical group.

Table 3. Mann Whitney test of C-ISI components, total score between clinical and control groups

<table>
<thead>
<tr>
<th>C-ISI</th>
<th>Clinical Group</th>
<th>Control Group</th>
<th>Z</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.difficulty falling asleep</td>
<td>75.24</td>
<td>20.00</td>
<td>-8.89</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>2.sleep maintenance</td>
<td>75.40</td>
<td>19.70</td>
<td>-8.96</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>3.waking up early morning</td>
<td>75.50</td>
<td>19.50</td>
<td>-9.03</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>4.daytime dysfunction due to sleep problem</td>
<td>75.50</td>
<td>19.50</td>
<td>-8.84</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>as reported by the patient</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.daytime dysfunction due to sleep problem</td>
<td>75.50</td>
<td>19.50</td>
<td>-9.13</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td>as reported by others</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.worry/distress due to difficulty in sleep</td>
<td>75.50</td>
<td>19.50</td>
<td>-8.99</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>7.Total score</td>
<td>75.50</td>
<td>19.50</td>
<td>-9.13</td>
<td>&lt;0.01</td>
</tr>
</tbody>
</table>

Table 4 presents spearman correlation coefficients between C-ISI component, Total scores and C-PSQI components and Total scores for clinical group (P < 0.0062 with Bonferroni correction). The significant correlated items of C-PSQI with C-ISI components, global scores according to spearman correlation coefficients are labeled by * in table 4.

Table 4. Spearman correlation coefficients between C-ISI component, Total scores and C-PSQI components and Total scores for clinical group (P < 0.0062 with Bonferroni correction).

<table>
<thead>
<tr>
<th>ISI</th>
<th>D.O.S</th>
<th>S.D</th>
<th>S.L</th>
<th>D.D</th>
<th>O.S.Q</th>
<th>S.E</th>
<th>N.S.D</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. difficulty falling asleep</td>
<td>0.184</td>
<td>0.257</td>
<td>0.716*</td>
<td>0.87</td>
<td>0.151</td>
<td>0.23</td>
<td>0.183</td>
<td>0.325*</td>
</tr>
<tr>
<td>2. sleep maintenance</td>
<td>0.312*</td>
<td>0.65</td>
<td>0.56</td>
<td>0.265</td>
<td>0.466*</td>
<td>0.305</td>
<td>0.64</td>
<td>0.375*</td>
</tr>
<tr>
<td>3. waking up early morning</td>
<td>0.375</td>
<td>0.68</td>
<td>0.06</td>
<td>0.177</td>
<td>0.435*</td>
<td>0.258</td>
<td>0.044</td>
<td>0.288</td>
</tr>
<tr>
<td>4.daytime dysfunction (reported by the patient)</td>
<td>0.235</td>
<td>0.151</td>
<td>0.15</td>
<td>0.228</td>
<td>0.824*</td>
<td>0.533*</td>
<td>0.140</td>
<td>0.595*</td>
</tr>
<tr>
<td>5.daytime dysfunction (reported by others)</td>
<td>0.51</td>
<td>0.135</td>
<td>0.60</td>
<td>0.548*</td>
<td>0.283</td>
<td>0.263</td>
<td>0.010</td>
<td>0.282</td>
</tr>
<tr>
<td>6.worry/distress due to difficulty in sleep</td>
<td>0.74</td>
<td>0.139</td>
<td>0.041</td>
<td>0.346*</td>
<td>0.355*</td>
<td>0.203</td>
<td>0.064</td>
<td>0.301</td>
</tr>
<tr>
<td>7.Total score</td>
<td>0.068</td>
<td>0.63</td>
<td>0.230</td>
<td>0.047</td>
<td>0.234</td>
<td>0.80</td>
<td>0.340*</td>
<td>0.328*</td>
</tr>
</tbody>
</table>
Discussion

Analyzing of data in this research showed that C-ISI have a good internal consistency similar to other research\(^1,5\). The reliability in control group was more than clinical group. Significant correlation between the C-ISI components and total scores in test-retest also represent the consistency of C-ISI. Mean rank of C-ISI components, total score between clinical and control groups explained high rank in clinical group that means they have sleep problem so C-ISI has a good sensibility to measure sleep problems. In spearman correlation coefficients between C-ISI components, total scores and C-PSQI components and Total scores for clinical group (P < 0.0062 with Bonferroni correction), The C-PSQI was significantly correlated with C-ISI related Items. Difficulty falling asleep Item has a correlation with sleep latency and total score of C-PSQI. Sleep maintenance Item has a correlation with duration of sleep, overall sleep Quality and total score of C-PSQI. Waking up early morning Item has a correlation with overall sleep Quality of C-PSQI. Daytime dysfunction (reported by the patient) Item has a correlation with sleep efficacy, overall sleep Quality and total score of C-PSQI. Daytime dysfunction (reported by the others) Item has correlation with day time dysfunction of C-PSQI. Item of worry/distress due to difficulty in sleep has a correlation with day time dysfunction and overall sleep Quality of C-PSQI. Total score of C-ISI has a correlation with total score of C-PSQI but there is no any correlation between need sedative drugs component of C-PSQI with C-ISI Items except total scores. It can be explained that there is no Item due to using drug in C-ISI.

In general this study showed C-ISI has a good reliability, sensitivity and convergent and discriminant validity besides C-ISI has a good relationship with C-PSQI in insomnia. There is an inherent limitation in this study because we did not obtain a standardized diagnosis of insomnia so we could not be computed accuracy measures of sensitivity and specificity and assessment of the cutoff score. Although it is suggested to do research in other part of china where common Chinese language (Putonghua) is not mother language, C-ISI can be used in the clinic and researches in Chinese speakers.

References


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An Evaluation of Eating Behavior, Psychosocial Status and Body Mass Index among Adolescents in Malaysia

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Abstract

Objective: This study is an attempt to produce an abbreviated Malay version of Weight and Lifestyle Inventory (MWALI), as well as to examine the psychometric properties of the eating behavior which formed part of MWALI. Methods: The MWALI was translated ‘forward–backward’ from English to Malay and then administered to 135 adolescents. The factor construct of the 24-item eating behavior and the relationships between factor scores and demographic profile, dysphoria, global self-esteem and body mass index (BMI) were examined. Results: The exploratory factor analysis yielded five factors: Negative Emotion, Poor Impulse Control, Social Cues, Snacking and Early Meals in relation to over-eating. All the factors were significantly and positively correlated with BMI. Internal consistency and test-retest reliability of the eating behavior were satisfactory. Conclusion: MWALI is appropriate for assessing eating behavior among overweight and obese adolescents in the primary care setting in Malaysia.

Keywords: Adolescents, Body Mass Index, Eating Behavior, Reliability, Validity

Introduction

Overweight and obesity has always been a major public health concern with complex interactions between biological, behavioral, psychosocial and environmental factors. Studies show that gender, age, level of obesity and socioeconomic status are known moderators that explain the causal relationship between obesity and mental disorders, whereas unhealthy dietary habits, inadequate physical activities and low self-esteem are the mediators that may explain these associations. Psychosocial functioning involve multiple aspects of self-esteem and self-perceptions; mood, history of tobacco and substance use (or abuse); current stressors; and weight loss motivation and expectations. Study by Istvan et al. showed that there was no relationship between body mass index (BMI) and depression among men but women with higher BMI and who smoked were 38% more likely to score higher on the Center for Epidemiologic Studies Depression (CES-D) scale.

The 2011 National Health and Morbidity Survey in Malaysia reported an increase in the incidence of overweight from 16.6% in 1996 to 33.6% and obesity from 4.4% to 19.5%, thus putting a pressure on the government to act firmly through various ministries and agencies. Women make up more than 46% of the work-force and this is believed to be a significant contributor to changes in the dietary patterns of Malaysians. More families choose to buy outside food, eating at odd hours or rely heavily on the fast food, and the younger children to miss their breakfast. This has led to a significant increase in the incidence of non-communicable disease such as obesity.

The Weight and Lifestyle Inventory (WALI), originally developed by Wadden and Foster, is a self-report inventory that combines few questionnaires that assesses biological, environmental, and psychosocial factors related to weight control. It has 12 sections that requires between 60 to 90 minutes to complete, including a section on a 24-item eating behavior scale that rates the degree of eating behavior that contributes to
weight gain quantitatively. The eating behavior scale assesses eating in response to negative emotion, social cues, and lack of appetite control, snacking in between meals and over-eating during breakfast and lunch. WALI has been used previously in the study of behavioral evaluation of obese patients seeking bariatric surgery. In the primary care setting where most patients enter the health system, a brief and clear assessment tool to evaluate the biological, behavioral and psychosocial aspects of overweight and obesity may improve the response rate especially when the subjects involve adolescents.

Obesity management is a multi-disciplinary effort involving the dietitian, physiotherapist, psychologist, psychiatrist, bariatric surgeons, endocrinologist and others. In order to maximize the quality of care of obese patients, intervention strategies should include evaluations of weight management to ensure early detection preferably during primary or secondary schools, prevention and co-treatment of those at risk such as family members and community at large. Therefore this study aimed to investigate multiple aspects of behavior, mood and psychosocial functioning in relation to BMI among the adolescents in Kuala Lumpur, Malaysia. The variables were assessed based on selected items in the original Weight and Lifestyle Inventory (WALI) and to explore the validity and reliability data of eating behavior.

Methods

Participants

kafe@TEEN is an adolescent center located in National Population and Family Development Board (NPFDB), Kuala Lumpur. This centre provides information, counseling and clinical services on sexual and reproductive health, quit smoking and weight management to adolescents aged 13 to 24 years old. Out of 140 adolescents registered during the study period, 135 agreed to participate.

Development of abbreviated Malay version of Weight and Lifestyle Inventory (MWALI)

Following an in-depth discussion between ASZ, MBR and the dietitian, some sections from the original WALI were included and modified:

Weight and weight loss history
Section on weight and weight loss history were modified in order to produce continuity of informations. E.g. respondent’s perception on current weight, previous weight control effort and support received while attempting weight control.

Weight loss goals
This section was replaced objectively with four items adapted from “Readiness to change assessment for obese patient” which was a dichotomous measure of subject’s readiness to lose weight through diet improvement and exercise. This will determine if the person is in pre-contemplation, contemplation, action and maintenance stage.

Family weight history
There were eight sub-figures scale with each given a number representing different degrees of body size, with sub-figure 5 representing overweight and sub-figures 6 – 8 as obese. The respondents were required to choose a sub-figure that was most similar to their parent’s or family member’s body shape.

Weight, pregnancy and menstrual cycle, and tobacco use
These sections described information on physiological changes (in women) and smoking, on eating pattern and weight loss. For example; weight changes with pregnancy, food craving during menses and smoking as means to lose weight.

Physical Activity
Physical activity was briefly assessed to determine the respondent’s lifestyle pattern and physical activity and inactivity (e.g. hours of watching TV).

Eating behavior scale
The 24 items eating behavior scale were grouped into five domains. These were eating/over-eating in response to negative emotion, social cues, during breakfast/lunch, snacking and lack of appetite control. For the current study, items were rated on a three-point Likert scale, from does not contribute at all, contributes a little amount and contributes a large amount.

Self perception scale
It was a four-item adapted and modified from section N that assessed satisfaction to current weight, body shape, over-all appearance, and self as compared with other people. The subjects were required to respond based on a five-point scale from very dissatisfied to very satisfied.
Measures
The following measures were also used to determine the construct validity of the eating behavior and self-perception scale in the present study:

Socio-demographic profile
Age, ethnicity, religion, highest education level achieved, and living arrangement data were collected.

Body Mass Index (BMI)
BMI is a number calculated based on the adolescent’s weight and height. Height and weight measurements were taken by a staff nurse using calibrated standardized equipment. BMI was then calculated as kg/m². Each adolescent was then categorized into weight status categories: (1) underweight (BMI<5th percentile or <18.5 kg/m²); (2) healthy weight (BMI: 5th to 84th percentiles or 18.5–24.9 kg/m²); (3) overweight (BMI: 85th to 94th percentiles or 25.0–29.9 kg/m²); and (4) obese (BMI > 95th percentile or 30 kg/m²).

The Rosenberg Self-esteem Inventory
This scale has been used in secondary school in Malaysia with internal consistency of 0.8015. It is a 10-item measure of general feelings of self-worth. The respondents were required to respond on a five-point Likert scale ranging from “strongly agree” to “strongly disagree” to five positive statements and five negative statements.

Malaysian Mental Health Screening (SSKM-20) Scale
It is a 20-item mental health screening instrument developed to identify people in the community with mental health related problems16. Seven items assess low mood or dysphoria; “Sad”, “Irritable”, “Not interested in talking”, “Frequent awakening in the night”, “Crying or feel like crying”, “Do not like to mix with others” and “Poor memory or forgetfulness” (items 1, 2, 3, 4, 7, 11, and 13). These feelings are rated using the 4-point Likert scale from “None” to “Always”. The SSKM-20 is not intended to detect eating disorders. It shows good psychometric properties and is moderately correlated with total Depression, Anxiety and Somatic Scale 21(DASS21) score (α =0.77, p < 0.001).

Procedure
This study was approved by the Research and Ethics Committee, National Population and Family Development Board (NPFDB), Malaysia. Administration of the questionnaires took place between March 2012 and August 2012 at the kafe@TEEN, NPFDB, Kuala Lumpur. Each questionnaire, which had been forward-and-backward translated into the Malay language was self-administered by the adolescents anonymously after the 20 minutes “Diet Talk” given by MBR. For those who had agreed to participate in the study, oral consent was obtained and for those aged 18 years old and below, consent was obtained from the parents via phone. Purposive sampling was undertaken and they were allowed to ask questions regarding the study and to withdraw at any time. The participants were required to self-administer the questionnaires in the presence of CEH, who was on-hand to answer questions and to collect the completed questionnaires.

Statistical analysis
The data were analyzed using the Statistical Package for Social Sciences (SPSS) version 20.0. Descriptive statistics such as frequencies and percentage are used to display the distributions of the variables in this study. Exploratory factor analysis with promax rotation was used for factorial construct of eating behavior in MWALI and to obtain factor scores of each domains. Multivariate analysis of variance (MANOVA) was used to compare means of factor scores of eating behavior against categorical variable and Spearman’s correlation (r) was used to investigate the relationship between two continuous variables, at significance level p < 0.05.

Results
Data were collected from 135 adolescents with more Malays (82%), and female (59.3%), and mean age was 19 years. This study reported a mean BMI of all respondents as 23.2 ± 6.2 kg/m². Of these, 15% of the adolescents were obese and 19% were overweight. However nine (7%) male adolescents with BMI above 25 kg/m² inaccurately perceived themselves as having no weight problem as compared to two (3%) female. Ten (12.5%) female who were normal weight inaccurately perceived themselves as overweight/obese. 49.6% of the adolescents reported their mother as housewives and 73% of their mothers prepared their home-cooked meals. 21% of the adolescents skipped breakfast and 22% had supper or night snack after 10 pm. 27% to 55% bought food either for breakfast, lunch or dinner. 35% identified their mother’s shape to be either in figure 5 (23%) or 6 (11%) and one each for 7 and 8. As for
the father’s shape, 17% identified the father to be in figure 5, 6 (19%) and 7 at 7%. 18.5% of the girls described their menses as irregular and 19.3% reported of eating more than usual during menses. 14% of the respondents smoked cigarette and seven of them believed quitting cigarette would increase weight. As for the weight loss goal, 11.1% (n=15) from the overweight and obese group were in pre-contemplation (“were not considering losing weight in the next six months”), 14.8% (n=20) were in contemplation stage (“who were seriously considering losing weight in the next 6 months) and only 8.1% (n=11) in action stage (were actively trying to lose weight). The socio-demographic profiles of the respondents are shown in Table 1.

Table 1. The Sociodemographic Profile of the adolescents

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Male N = 55 (40.7%)</th>
<th>Female N = 80 (59.3%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years), mean ± sd</td>
<td>18.56 ±3.393</td>
<td>19.22 ±3.848</td>
</tr>
<tr>
<td>BMI (kg/m²), mean ± sd</td>
<td>23.76 ± 6.436</td>
<td>22.94 ± 6.057</td>
</tr>
<tr>
<td>Under weight</td>
<td>10 (18.2%)</td>
<td>17 (21.2%)</td>
</tr>
<tr>
<td>Normal weight</td>
<td>27 (49.1%)</td>
<td>35 (43.8%)</td>
</tr>
<tr>
<td>Overweight</td>
<td>10 (18.2%)</td>
<td>16 (20%)</td>
</tr>
<tr>
<td>Obese</td>
<td>8 (14.5%)</td>
<td>12 (15%)</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Malay</td>
<td>46 (83.6%)</td>
<td>65 (81.2%)</td>
</tr>
<tr>
<td>Chinese</td>
<td>6 (10.9%)</td>
<td>9 (11.2%)</td>
</tr>
<tr>
<td>Indian</td>
<td>3 (5.5%)</td>
<td>6 (7.5%)</td>
</tr>
<tr>
<td>Highest education level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UPSR (Primary)</td>
<td>4 (7.3%)</td>
<td>18 (22.5%)</td>
</tr>
<tr>
<td>PMR (Secondary lower)</td>
<td>16 (29.1%)</td>
<td>7 (8.8%)</td>
</tr>
<tr>
<td>SPM (Secondary upper)</td>
<td>26 (47.3%)</td>
<td>32 (40%)</td>
</tr>
<tr>
<td>Diploma/Degree (Tertiary)</td>
<td>9 (16.4%)</td>
<td>23 (28.8%)</td>
</tr>
<tr>
<td>Physical exercise</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>48 (87.3%)</td>
<td>45 (56.2%)</td>
</tr>
<tr>
<td>No</td>
<td>7 (12.7%)</td>
<td>35 (43.8%)</td>
</tr>
<tr>
<td>Total calories intake in 24 hours (kcal)</td>
<td>1507.93 ± 1015.09</td>
<td>1318.28 ± 446.14</td>
</tr>
<tr>
<td>During usual weekday, mean ± sd</td>
<td>1210.06 ± 468.50</td>
<td>1221.43 ± 423.30</td>
</tr>
</tbody>
</table>

Reliability
Reliability test was performed on eating behavior and self-perception scales. The eating behavior scale showed moderate internal consistency, (Cronbach’s α = 0.753) and test re-test reliability (Intraclass Correlation Coefficient) of 0.748 (95%CI: 0.600, 0.860). The self-perception scale gave good internal consistency when item 5 (“Compared to other people, are you satisfied with your self-esteem?”) was deleted with Cronbach’s α = 0.909 and test-retest reliability of 0.917 (95%CI: 0.857, 0.956).

Construct Validity
A principal axis factoring with promax rotation was employed as the components were not expected to be independent of each other as well as to understand the latent structure17. The criteria used to retain the most appropriate number of factors are: (a) eigen-values > 1, (b) minimum factor loadings of 0.25, (c) scree plot i.e. retaining factors above the “elbow”, and (d) meaningful interpretation of factors that share some conceptual meaning18. All initial communalities were > 0.30 except for items a (“Eating with family/friends”), c (“Eating at business functions”) and l (“Eating because I feel physically hungry”). A total of seven items were eliminated because they did not contribute to a simple factor structure and failed to meet a minimum criteria of having a primary factor loading of 0.25. The exploratory factor analysis of the remaining 17 items Eating Behaviors gave favorable values of the Kaiser–Meyer–Olkin (0.795) and a significant value (p < 0.001) of Bartlett’s Test of Sphericity, therefore the data were suitable for further factor analysis. The five factors extracted explained 53.6% of the total variance. The first factor was labeled “Negative Emotion” as all five items assessed eating when angry, depressed/upset, anxious, stressed and bored. The second factor labeled “Poor Impulse Control” consisted of six items related to eating too much food, can’t stop when eating, overeating at dinner, don’t feel full when eating, eating in response to sight of food, and to good taste. The other three factors with two items each were labeled “Social Cues”, “Snacking” and “Early
Meals”. Item descriptions, factor loadings, communality estimates, and internal consistency of each factor were presented in Table 2.

Table 2. Exploratory Factor Analysis of the eating behavior scale

<table>
<thead>
<tr>
<th>Items</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>p. Eating when angry</td>
<td>0.90</td>
<td></td>
<td></td>
<td></td>
<td>0.76</td>
</tr>
<tr>
<td>o. Eating when depressed/upset</td>
<td>0.84</td>
<td></td>
<td></td>
<td></td>
<td>0.66</td>
</tr>
<tr>
<td>q. Eating when anxious</td>
<td>0.80</td>
<td></td>
<td></td>
<td></td>
<td>0.63</td>
</tr>
<tr>
<td>n. Eating when stressed</td>
<td>0.69</td>
<td></td>
<td></td>
<td></td>
<td>0.58</td>
</tr>
<tr>
<td>s. Eating when bored</td>
<td>0.33</td>
<td></td>
<td>0.27</td>
<td></td>
<td>0.30</td>
</tr>
<tr>
<td>i. Eating too much food</td>
<td>0.79</td>
<td></td>
<td></td>
<td></td>
<td>0.71</td>
</tr>
<tr>
<td>g. Eating because I can’t stop once I’ve begun</td>
<td>0.66</td>
<td></td>
<td></td>
<td></td>
<td>0.40</td>
</tr>
<tr>
<td>h. Overeating at dinner</td>
<td>0.64</td>
<td></td>
<td>0.29</td>
<td></td>
<td>0.66</td>
</tr>
<tr>
<td>j. Continuing to eat because I don’t feel full after a meal</td>
<td>0.64</td>
<td></td>
<td></td>
<td></td>
<td>0.46</td>
</tr>
<tr>
<td>e. Eating in response to sight or smell of food</td>
<td>0.33</td>
<td></td>
<td></td>
<td></td>
<td>0.37</td>
</tr>
<tr>
<td>f. Eating because of the good taste of foods</td>
<td>0.28</td>
<td></td>
<td></td>
<td></td>
<td>0.35</td>
</tr>
<tr>
<td>d. Eating when happy</td>
<td>0.84</td>
<td></td>
<td></td>
<td></td>
<td>0.72</td>
</tr>
<tr>
<td>b. Eating when socializing/celebrating</td>
<td>0.59</td>
<td></td>
<td></td>
<td></td>
<td>0.40</td>
</tr>
<tr>
<td>w. Snacking after dinner</td>
<td>0.85</td>
<td></td>
<td></td>
<td></td>
<td>0.76</td>
</tr>
<tr>
<td>x. Snacking between meals</td>
<td>0.61</td>
<td></td>
<td></td>
<td></td>
<td>0.49</td>
</tr>
<tr>
<td>u. Overeating at lunch</td>
<td>0.68</td>
<td></td>
<td>0.52</td>
<td></td>
<td></td>
</tr>
<tr>
<td>v. Overeating at dinner</td>
<td>0.52</td>
<td></td>
<td>0.34</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eigenvalues</td>
<td>5.22</td>
<td>2.39</td>
<td>1.43</td>
<td>1.19</td>
<td>1.09</td>
</tr>
<tr>
<td>Cronbach’s α (all items, α = 0.856)</td>
<td>0.83</td>
<td>0.80</td>
<td>0.69</td>
<td>0.74</td>
<td>0.59</td>
</tr>
</tbody>
</table>

*Only loadings >2.50 are displayed. For items that cross-loaded on more than one factor, only the highest loading was retained. Seven items did not load above 0.25 on any factor and were deleted.

Table 3 displays the Spearman’s correlation between factor scores of five domains of eating behavior scale, total SSKM-20 and Dysphoria subscale, total self-esteem (RSES), and BMI. All five factor scores of eating behavior domains were positively correlated with BMI (0.254 – 0.359, p<0.01). Overeating at Early Meals factor score was positively correlated with Dysphoria (p<0.05), Snacking factor score was positively correlated with total SSKM-20 (p<0.05). Overeating in response to Social Cues factor score was negatively correlated with total RSES (p<0.05).

Table 3. Correlation (Spearman’s rho) between eating behavior, Dysphoria, total SSKM-20, RSES and BMI

<table>
<thead>
<tr>
<th>Eating behavior</th>
<th>SSKM-20 total</th>
<th>RSES total</th>
<th>BMI</th>
</tr>
</thead>
<tbody>
<tr>
<td>NE</td>
<td>1.000</td>
<td><strong>0.469</strong>*</td>
<td><strong>0.659</strong>*</td>
</tr>
<tr>
<td>PIC</td>
<td>1.000</td>
<td><strong>0.504</strong>*</td>
<td><strong>0.520</strong>*</td>
</tr>
<tr>
<td>SC</td>
<td>1.000</td>
<td><strong>0.425</strong>*</td>
<td><strong>0.504</strong>*</td>
</tr>
<tr>
<td>Snack</td>
<td>1.000</td>
<td><strong>0.506</strong>*</td>
<td>0.149</td>
</tr>
<tr>
<td>EM</td>
<td>1.000</td>
<td>0.177*</td>
<td>0.144</td>
</tr>
<tr>
<td>Dys</td>
<td>1.000</td>
<td><strong>0.838</strong>*</td>
<td>0.159</td>
</tr>
<tr>
<td>SSKM-20 total</td>
<td>1.000</td>
<td>0.158</td>
<td>0.152</td>
</tr>
<tr>
<td>RSES</td>
<td>1.000</td>
<td>0.087</td>
<td></td>
</tr>
<tr>
<td>BMI</td>
<td>1.000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NE = eating in response to Negative Emotion, PIC = Poor Impulse Control, SC = eating in response to Social Cues, Snack = Snacking at night/in between meals, EM = Overeating at Early Meals, Dys = Dysphoria, SSKM-20 = Malaysian Mental Health Screening, RSES = Rosenberg Self Esteem Scale, BMI = Body Mass Index.

*p<0.05, **p<0.01
Psychosocial Characteristics, Body Mass Index (BMI), Eating Behaviors and Self Perceptions

From the 135 adolescents, 10.4% of the underweight and 25.2% of the overweight-obese group had total score above 14 for SSKM-20 (cut-off score to suggest presence of psychiatric disorder). Female described having symptoms of dysphoria as “often” in 69% as compared to male adolescents (31%) but this was not significant. There’s significant but weak correlation between dysphoria and over-eating during breakfast and lunch (Early Meals factor) ($r = 0.177$, $p < 0.05$). Eating in response to Social cues (“Eating when happy” and “Eating when socializing/celebrating”) was negatively correlated with Global Self-esteem ($r = -0.205$, $p < 0.05$). 72.6% of the respondents scored average in Global Self-esteem and the remaining scored low. BMI was not correlated with Global self-esteem (RSES) but was negatively correlated with “Satisfaction on current weight” ($r = -0.374$, $p < 0.01$), “Satisfaction on current body shape” ($r = -0.337$, $p < 0.01$) and “Satisfaction on over-all appearance” ($r = -0.210$, $p < 0.05$). Dysphoria was significantly but weakly correlated with “Satisfaction on current body shape” ($r = -0.201$, $p < 0.05$).

Multivariate analysis of variance was used to test for the difference in mean BMI, Dysphoria, total SSKM-20, total RSES, and all the five factor scores of the eating behavior between female and male adolescents. The results showed that only the mean score of eating in response to Negative Emotion ($F(1,133) = 6.24$, $p<0.05$) and Social Cues ($F(1,133) = 5.31$, $p<0.05$) in female were significantly higher compared to male adolescents (Figure 1). The mean total RSES among the female on the other hand was significantly lower compared to mean total RSES in male, $F(1,133) = 5.90$, $p<0.05$.

Discussion

This study of the psychometric properties of eating behavior that was translated from Weight and Lifestyle Inventory (WALI) into the Malay language has an acceptable level of internal consistency, test-retest stability, and construct validity as in the previous study. To the authors’ knowledge, this is the first study to translate and produce a shortened version of the Malay translation of the Weight and Lifestyle Inventory (MWALI) with an assessment of the factorial structure of eating behavior scale. The results suggested that the five factors of eating behavior in the MWALI labeled as Negative Emotion, Poor Impulse Control, Social Cues, Snacking and Early Meals were relatively correlated.

This preliminary study among adolescents as young as 13 years old attending adolescent center, reported that 15% of respondents were obese, 19% overweight, and 20% underweight, based on the BMI and percentile. In 1997, the prevalence of
obese and overweight school children in Kuala Lumpur were 3.5% and 6.0%, respectively\textsuperscript{19}. These children may become overweight and obese adolescents based on a study by Serdula\textsuperscript{17}. Low levels of physical activity among young Malaysian adults compounded by poor eating habit were evident in this study, where 31% of adolescents did not engage in any physical activities, 21% skipped meals and 22% had supper after 10 pm and this was consistent with other similar studies in Malaysia\textsuperscript{18}.

There is substantial evidence that obesity increases the risk of depression through a response called emotional eating which depicts the relationship between eating, range of negative emotions and the increased energy intake\textsuperscript{20}. However, Early Meals domain rather than the Negative Emotion domain of eating behavior was found to be correlated with dysphoria. Previous study showed that reduced brain serotonin was associated with depressive symptoms and hyperphagia but negative emotions alone might not be responsible for overeating among obese people as there were other physiological factors in the brain that control motivation, repetitive behavior, and poor impulse control in eating behavior\textsuperscript{21}. Early Meals domain from the original WALI refers to over-eating during breakfast and lunch. However, many Malaysian adults consume breakfast and lunch with high levels of fat and sugar outside home, and children who eat out with their families consume similar diet when dining out. According to French\textsuperscript{22}, there is a high probability that adults and children are consuming more fat and calories through the intake of fried foods and soft drinks, with less fruits and vegetable when they eat out instead of eating at home or as a psychological response to stress. Another study showed that high cortisol level during early morning was associated with greater visceral adiposity among adolescent girls\textsuperscript{23}. This may explain the significant relationship between Early Meals and dysphoria in this study with the tendency of adolescents to over-indulge in high fat and sugar/carbohydrate food during breakfast.

Snacking. Although SSKM-20 is not intended to diagnose Eating Disorder in the general population, but it is important to take note that the items “Snacking after dinner” and “Snacking between meals” may be associated with problems related to Binge Eating Disorder or Night Eating Syndrome, and therefore further research with larger representative samples of both overweight and obese adolescents would add to our understanding of these disorders using tools specific for Eating Disorders.

Females reported a higher mean score in eating in response to Negative Emotion and Social Cues and lower self-esteem as compared to males in this study. Females tend to cope with stress associated with weight problems by eating more food and by being in social circles where they talk about their problems but for the males, they tend to ignore the situation\textsuperscript{24}. In a community-based longitudinal study, anxiety and depression were associated with higher BMI in females but not in males\textsuperscript{25}. Low self-esteem, and lack of physical activities were known mediating factors in obesity related mental disorders in adolescents, and the strength or direction of this relationship could be affected by gender and age\textsuperscript{26}.

The MWALI has 11 sections and it takes between 15 to 20 minutes for one to complete the questionnaire. Four sections assess weight related histories; other sections assess eating habit and behavior, menstrual or pregnancy history for female, smoking and substance or alcohol use history, physical activities, known medical illness and medication and self-perception on weight. The section on “Food Intake Recall” is only used for the purpose of total calories assessment in this study but is omitted from MWALI. A trained dietitian is not only required to use the software for calorie counting but previous studies questioned the validity and reliability of the dietary recall methods to determine the amounts of energy consumed\textsuperscript{27}.

The limitation of this study is the relatively small sample for exploratory factor analysis, a bigger sample size preferably 10 samples per number of item will yield more interpretable results. The use of self-rating questionnaire especially in the younger age group to rate their eating behaviors and self-perceptions depends extensively on their intellectual abilities, social and cultural background and understanding of the concept of certain items in relation to their response to eating and their well-being.
Conclusion

The MWALI is suitable to be used as a public health screening and intervention in primary prevention of obesity in clinics and the study of eating behaviors among overweight and obese adolescents. This questionnaire can assist clinicians and dietitians in providing appropriate treatment to patients with weight problems and to focus on weight-related biological, psychosocial and behavioral factors. Further research on obesity in adolescents should be directed at family-oriented interventions where the entire family should be involved in treatment recommendations. This is important as this study shows a significant association of poor eating behavior especially over eating during breakfast and lunch and snacking with dysphoria and mental disorder. There is a need to improve family health, increase awareness of healthy weight and lifestyle from young through education, dissemination of knowledge, improvement in attitude and ultimately healthy living practice.

Acknowledgement

The authors wish to express their gratitude to the Director General of National Population and Family Development Board who gave permission for the research to be conducted. We would like to thank the Teen Educators of kafe@TEEN, the adolescents involved, Assoc. Prof. Dr. Ng Chong Guan (Dept. of Psychological Medicine, University of Malaya), and Dr. Romzi Mohd Ali (Dept. of Dietetic and Food Services, Kuala Lumpur Hospital) in the translation process.

References


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Factorial Validation of “How I Think” Questionnaire Among Male Inmates in Malaysia

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Abstract

Introduction: Cognitive distortion seems to be a potential force in shaping criminals and antisocial behaviour within an individual. Unfortunately there is no valid Malay psychometric instrument available to measure cognitive distortion in Malaysian settings, especially in prisons. There is an urgent need to have a valid and reliable Malay psychometric instrument to assess the cognitive distortion among Malaysians. Therefore, the present study aimed to validate “How I Think” Questionnaire into the Malay language (henceforth, HIT-M). Methods: A cross-sectional study was conducted among inmates (n = 150) incarcerated within two prisons in Peninsular Malaysia. The validation study commenced with Forward-Backward translations and was followed by content and face validities. Later, construct validity was performed via Exploratory Factor Analysis using Principal Component Analysis. Varimax rotation was applied in order to optimize the factor loadings on the extracted component. Finally, reliability testing was performed to determine the internal consistency of the items which was done using Cronbach Alpha coefficient method (α). Findings: Initial factor loadings resulted in 11 factors with a total variance of 74.1%. Next, factor analysis was repeated by extracting the items into a four factor structure parallel to the theoretical construct. Items with factor loadings above 0.40 were retained as acceptable factor loadings. After considering factor loadings, item correlation and content of items, the final version of HIT-M consisted of 24 items. The internal consistency of HIT-M was 0.90 which was considered good. Conclusion: HIT-M is a valid and reliable psychometric instrument to measure and assess cognitive distortion among Malaysians.

Keywords: Antisocial Behaviour, Cognitive Distortion, Criminal Behaviour, Reliability, Validation
**Introduction**

Crime and violence are visualised as destructive elements of a nation. The written and verbal portrayal of crime and violence has prompted criminal justice agencies to come up with various proactive measures to combat crime. Underlying proactive measures, research and knowledge regarding psychological aspects of criminals are vital and crucial for key personnel to address the possible psychological factors for crime engagement. This is in order to facilitate early interventions among at-risk groups.

In determining the possible factors for crime engagement, the importance of cognitive aspects has been recently examined within the field of criminology and social psychology. Several theories have been formulated as attempts to explain the commencement, development, and persistence of antisocial and violent behaviour. In line with this, social-cognitive theories have illustrated cognitive distortion (CD) as a result of antisocial behaviour or deficiency in interpreting social events.

Generally, CD is contextualised as inaccurate or biased ways of conferring meaning upon experiences. In other words, CD can be viewed as inaccurate or rationalizing attitudes, thoughts, or beliefs concerning own or other's behaviour. While CD is often linked to criminals and delinquents, CD is also characterized as a normal psychological process that all individuals engage in, despite age, gender, race, sexual orientation, and sociodemographic grouping.

CD is often perceived as a risk factor for antisocial and violent behaviour. Antisocial behaviour which is defined as harmful behaviour to others, by breaking important social and moral norms; includes aggressive acts of serious assaults (e.g., murder, sexual assaults, and violent assaults) and less serious criminal behaviour like shoplifting, burglary and robbery. A growing body of diverse literatures have acknowledged the importance of CD as a causal factor for a wide range of externalizing behaviour problems such as delinquency, aggression and antisocial behaviour.

Across the criminological literature, there are various nomenclatures pertaining to CD. Various terms were provided for CD, for instance: CD represented with “rationalizations”, “minimizations”, “justifications”, “antisocial attitudes”, “criminal thinking style”, “social cognition” and “self-serving cognitive distortions”. However, for the purpose of the present validation study, self-serving cognitive distortions (SSCD) was used to describe and represent the CD exhibited by offenders in Malaysia. This is parallel to the terminology used in the How I Think Questionnaire (HIT).

Outcomes of the SSCD have been classified as primary and secondary cognitive distortions. In line with this, primary type cognitive distortions are said to form a consolidated egocentric bias as a result of self-centered attitudes, thoughts, and beliefs. Meanwhile, secondary type cognitive distortions are perceived as pre or post-transgression rationalizations that neutralize conscience, reduce stress, empathy, and guilty feelings.

According to Barigga et al., there are three secondary distortions: blaming others, minimizing/mislabeling, and assuming the worst. It was proposed that these secondary cognitive distortions support and reinforce primary distortions. Secondary cognitions...
protect self-image when a person displays or exhibits antisocial behaviour or deviant characteristics. Several psychometric instruments have been designed to measure the cognitive content of test takers. Examples include Criminal Attitudes to Violence Scale, Measure of Criminal Attitudes and Associates, Criminal Sentiments Scale–Modified, Psychological Inventory of Criminal Thinking Styles and the HIT questionnaire. All these psychometric instruments aimed to measure both the process and content of thinking that is assumed to promote and maintain criminality within the self.

Although the importance of CD in criminal and antisocial behaviour is widely acknowledged, and there are number of psychometric instruments available to assess the level of CD; a valid Malay version of an appropriate psychometric instrument is still lacking. Therefore, the present study aimed to validate the HIT which is used to measure SSCD. It is anticipated that many stakeholders will benefit from having a valid Malay version of HIT (henceforth, HIT-M) for use within Malaysian settings.

Methods

Study design and participants

The present validation study was an observational cross-sectional study which was conducted in mid 2012 using a guided self-administered questionnaire. The reference population for this validation study was those Malaysian inmates who have been charged for violent crimes. The source population of the present study took into account the inmates from two Malaysian prisons based on the selection criteria.

A series of inclusion and exclusion criteria were fixed by the researchers prior to the recruitment of participants. The inclusion criteria were males aged 18 years and above who had been charged for violent crime offences and voluntarily consented to this validation study. Those who were mentally unfit and unable to read and understand the Malay language were excluded from this study.

The calculation of the sample size for factor analysis was performed in accordance to Gorsuch’s formula in which the total number of items in HIT was multiplied by 5. Although the required sample size was 195 inmates, only 150 inmates participated in this validation study as the potential participants in this study are considered as a ‘hard to reach’ population.

For the purpose of this validation study, the recruitment of participants was based on the non-probability sampling method which was purposive sampling. Due to access restraints, the level of risk and dangerousness of this vulnerable group, the selection of participants were made by the prison authorities. The type of sampling was also to assure the safety of the researchers and prevent any possible opportunities to escape and perpetrate violence by the inmates.

Psychometric instrument

The HIT by Barriga et al. was developed and designed specifically to measure the level of SSCD as they relate to a wide range of externalizing behaviours. HIT has a theoretical ground that has been empirically tested with promising outcomes. The HIT...
consists of 39 items in four scales representing SSCD. In addition, HIT also contains eight anomalous response items and seven positive filler items to encourage the maximum use of this psychometric instrument. However, anomalous response and positive filler items were not included in the present validation study as the researchers were only concerned with types of SSCD.

Translation process

It should be born in mind that psychometric instruments which were developed in English or other foreign languages are not suitable to be used directly for non-English populations due to cultural and language differences. With this in mind, it was important to translate HIT into the Malay language since it is the formal and local language of Malaysian citizens. Therefore, two types of translations: forward and backward translations; were carried out at the beginning of this study.

It has been suggested that the process of using both forward and backward translations improve the reliability and validity of the translated questionnaire. As such, three bilinguals were assigned to carry out the forward translation from English to Malay language. Following this, the backward translation process from the Malay version to the English version were performed by three other bilinguals who had no prior knowledge of the original English version. The Malay version of HIT was termed as HIT-M.

Validation process

In order to obtain a valid HIT-M, three validation processes were carried out: Content, Face, and Construct validity. The content validity was performed by three experts from the field of criminology and psychology since the content validation of questionnaires need to be established by experts and professionals. For the purpose of face validity, HIT-M was distributed to the general public (n = 20) to consider cultural and community contexts of terms that were used in the HIT-M. Later, HIT-M was subjected to construct validity which was analysed using Exploratory Factor Analysis (EFA).

Data collection

For the purpose of construct validity, HIT-M was distributed to 150 male inmates from two Malaysian prisons. The ethical approval to conduct this validation was obtained from Universiti Sains Malaysia and Malaysian Department of Prisons. The objectives of the study was clearly explained to the participants and issues of confidentiality and anonymity were also clarified and assured. Proper instructions were given and signed consent was obtained prior to participants’ involvement.

The average time for questionnaire completion was about 20 minutes. The questionnaire was administered in a group format and were collected on the same day. The voluntary involvement of the participants were appreciated and verbally thanked.

Statistical analysis

The data was entered and analysed using the Statistical Package of Social Sciences (SPSS) version 20.0 software to report the descriptive statistics of sociodemographic information. This software was also used to analyse the construct validity of HIT-M. The construct validity was analysed using EFA.
by extracting factors using Principal Component Analysis (PCA). Prior to EFA, several preliminary analyses were performed to ensure the adequacy of sample size to enable factor analysis of HIT-M. As such, Kaiser-Meyer-Olkin (KMO) and Bartlett’s test of sphericity were performed. The sample size was considered adequate if KMO values is more than 0.60 and Bartlett’s test of sphericity is significant if p-value is less than 0.05.

As mentioned earlier, the PCA method was applied in the extraction of components in which components with eigenvalues of over 1 were retained. Varimax rotation was applied in order to optimize the factor loadings on the extracted component. Items with loading factor of more than 0.4 were assumed as an acceptable loading factor. Finally, reliability testing was performed to determine the internal consistency of the items in HIT-M which was done using Cronbach Alpha coefficient method (α).

Results

Sociodemographic information

The sociodemographic information were collected and presented in the form of descriptive statistics. The respondents’s age ranged between 19 and 53 years old with a mean age of 29.18 years (SD = 8.52). Table 1 below shows the summary of sociodemographic information of the respondents who were involved in the construct validation phase.

Table 1. Sociodemographic information of the male inmates (n = 150)

<table>
<thead>
<tr>
<th>Sociodemographic information</th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Marital status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>112</td>
<td>74.7</td>
</tr>
<tr>
<td>Married</td>
<td>29</td>
<td>19.3</td>
</tr>
<tr>
<td>Divorcee</td>
<td>4</td>
<td>2.7</td>
</tr>
<tr>
<td>Widower</td>
<td>5</td>
<td>3.3</td>
</tr>
<tr>
<td><strong>Highest education level</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never been to school</td>
<td>6</td>
<td>4.0</td>
</tr>
<tr>
<td>Primary</td>
<td>6</td>
<td>4.0</td>
</tr>
<tr>
<td>Lower secondary (Form 1-Form 3)</td>
<td>48</td>
<td>32.0</td>
</tr>
<tr>
<td>Upper secondary (Form 4-Form 5)</td>
<td>75</td>
<td>50.0</td>
</tr>
<tr>
<td>Pre-university</td>
<td>7</td>
<td>4.7</td>
</tr>
<tr>
<td>Diploma</td>
<td>8</td>
<td>5.3</td>
</tr>
<tr>
<td><strong>Occupational status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unemployed</td>
<td>20</td>
<td>13.3</td>
</tr>
<tr>
<td>Self employed</td>
<td>62</td>
<td>41.3</td>
</tr>
<tr>
<td>Semiskilled</td>
<td>54</td>
<td>36.0</td>
</tr>
<tr>
<td>Clerical-skilled</td>
<td>10</td>
<td>6.7</td>
</tr>
<tr>
<td>Professionals</td>
<td>4</td>
<td>2.7</td>
</tr>
<tr>
<td><strong>Substance abuse usage history</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No alcohol and drug consumption</td>
<td>24</td>
<td>16</td>
</tr>
<tr>
<td>Consumption Type</td>
<td>Count</td>
<td>Percentage</td>
</tr>
<tr>
<td>----------------------------------------</td>
<td>-------</td>
<td>------------</td>
</tr>
<tr>
<td>Alcohol consumption only</td>
<td>7</td>
<td>4.7</td>
</tr>
<tr>
<td>Drug consumption only</td>
<td>77</td>
<td>51.3</td>
</tr>
<tr>
<td>Both alcohol and drug consumption</td>
<td>38</td>
<td>25.3</td>
</tr>
<tr>
<td>Intoxicating substance consumption</td>
<td>4</td>
<td>2.7</td>
</tr>
</tbody>
</table>

**Translation process**

Overall, the outcomes of the translation processes were considered good. For each item, the standard of translation averaged 80 percent agreement between the translators. Only a few amendments were made due to ambiguously worded items or colloquial terms.

**Content and face validity**

All the experts who reviewed the content of HIT-M agreed that the items in HIT-M were relevant and covered the elements of SSCD. Overall, it was concluded that HIT-M exhibited a good and promising content validity. Furthermore, HIT-M also showed good face validity as the respondents were able to understand the items well. The language that was used seemed to be appropriate and culturally sensitive.

**Exploratory Factor analysis**

As mentioned previously, the construct validity of HIT-M involved 150 adult male inmates. The construct validity was assessed using EFA. The factors were extracted using PCA. Prior to factor extraction using PCA, preliminary analysis was conducted to test the suitability of data for factor analysis.

The preliminary analysis of HIT-M was found to be satisfactory. The inspection of the Anti-image correlation matrix was above 0.5 for all items. The KMO value was 0.66, suggesting adequate sampling to enable factor analysis. Meanwhile, the Bartlett’s Test of Sphericity was found to be highly significant with p-value of less than 0.001, supporting the factorability of the correlation matrix.

Varimax rotation was performed in order to aid the interpretation of factor loadings. Initial factor analysis was computed by including all the items of HIT-M. This resulted in 11 loading factors that explained 74.1% of the total variance. The scree plot suggested 11 sub components with eigenvalues above 1.

Since the theoretical construct of SSCD suggested four domains, the factor analysis was repeated by reducing 11 factors to 4 factors which accounted for 49.7% of the total variance. The scree plot suggested four sub components with eigenvalues above 1. After considering the factor loadings, item correlation and the content of items; several items were removed.

The new KMO value after removal of several items was 0.77. Bartlett’s Test of Sphericity was highly significant (p-value<0.001). The result in Table 2 was chosen as the final factor analysis which consisted of six items in each domain, giving a total number of 24 items. All these 24 items loaded at greater than 0.40.
Table 2. Final factor loadings of HIT-M

<table>
<thead>
<tr>
<th>No.</th>
<th>Items</th>
<th>Component</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Factor 1</td>
</tr>
<tr>
<td>1</td>
<td>Self-centered 9</td>
<td>.74</td>
</tr>
<tr>
<td>2</td>
<td>Self-centered 4</td>
<td>.74</td>
</tr>
<tr>
<td>3</td>
<td>Self-centered 5</td>
<td>.73</td>
</tr>
<tr>
<td>4</td>
<td>Self-centered 3</td>
<td>.72</td>
</tr>
<tr>
<td>5</td>
<td>Minimizing 21</td>
<td>.60</td>
</tr>
<tr>
<td>6</td>
<td>Self-centered 6</td>
<td>.57</td>
</tr>
<tr>
<td>7</td>
<td>Assuming the worst 36</td>
<td>.81</td>
</tr>
<tr>
<td>8</td>
<td>Assuming the worst 37</td>
<td>.78</td>
</tr>
<tr>
<td>9</td>
<td>Blaming others 12</td>
<td>.68</td>
</tr>
<tr>
<td>10</td>
<td>Blaming others 14</td>
<td>.68</td>
</tr>
<tr>
<td>11</td>
<td>Blaming others 18</td>
<td>.60</td>
</tr>
<tr>
<td>12</td>
<td>Blaming others 15</td>
<td>.57</td>
</tr>
<tr>
<td>13</td>
<td>Minimizing/ mislabeling 22</td>
<td>.62</td>
</tr>
<tr>
<td>14</td>
<td>Minimizing/ mislabeling 28</td>
<td>.61</td>
</tr>
<tr>
<td>15</td>
<td>Minimizing/ mislabeling 24</td>
<td>.54</td>
</tr>
<tr>
<td>16</td>
<td>Assuming the worst 32</td>
<td>.53</td>
</tr>
<tr>
<td>17</td>
<td>Minimizing/ mislabeling 27</td>
<td>.51</td>
</tr>
<tr>
<td>18</td>
<td>Minimizing/ mislabeling 23</td>
<td>.50</td>
</tr>
<tr>
<td>19</td>
<td>Minimizing/ mislabeling 20</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Assuming the worst 33</td>
<td>.67</td>
</tr>
<tr>
<td>21</td>
<td>Blaming others 16</td>
<td>.59</td>
</tr>
<tr>
<td>22</td>
<td>Assuming the worst 34</td>
<td>.57</td>
</tr>
<tr>
<td>23</td>
<td>Blaming others 11</td>
<td>.50</td>
</tr>
<tr>
<td>24</td>
<td>Assuming the worst 35</td>
<td>.43</td>
</tr>
</tbody>
</table>


Based on the final factor loading table above, Factor 1 comprises of six items with factor loadings .57 to .74. The items are Self-centered 9, Self-centered 4, Self-centered 5, Minimizing/mislabeling 21, and Self-centered 6. Factor 2 comprises of six items with factor loadings ranging from .57 to .81. The items are Assuming the worst 36, Assuming the worst 37, Blaming others 12, Blaming others 14, Blaming others 18, and Blaming others 15.

The next is Factor 3 which also consisted of six items. Factor 3 constitutes of Minimizing/ mislabeling 22, Minimizing/ mislabeling 28, Minimizing/ mislabeling 24, Assuming the worst 32, Minimizing/ mislabeling 27, and Minimizing/ mislabeling 23 with factor loadings ranging from .50 to .62. Finally, the Factor 5 consisted of 6 items (Minimizing/ mislabeling 20, Assuming the worst 33, Blaming others 16, Assuming the worst 34, Blaming others 11, and Assuming the worst 35) with factor loadings ranging from .43 to .75. All the factor loadings for 24 items were satisfactory and promising.
Reliability testing

The reliability of HIT-M was calculated using the Cronbach alpha method. In addition, Cronbach alpha were computed for all the domains in HIT-M to ascertain the internal consistency values. The overall internal consistency seemed to be highly promising which is 0.90. The reliability for four domains in HIT-M ranged from 0.76 to 0.87 indicating good Cronbach alpha values. Table 3 depicts the internal consistency of the overall scale and also for each domain in HIT-M.

<table>
<thead>
<tr>
<th>Domain</th>
<th>Number of items</th>
<th>Cronbach alpha (α)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall</td>
<td>24</td>
<td>0.90</td>
</tr>
<tr>
<td>Self-centered</td>
<td>6</td>
<td>0.87</td>
</tr>
<tr>
<td>Blaming others</td>
<td>6</td>
<td>0.83</td>
</tr>
<tr>
<td>Minimizing/ mislabeling</td>
<td>6</td>
<td>0.80</td>
</tr>
<tr>
<td>Assuming the worst</td>
<td>6</td>
<td>0.76</td>
</tr>
</tbody>
</table>

Table 3. Internal consistency of each domain in HIT-M

Discussion

Over the past decades, the importance of CD as a marker for criminal behaviour has been highlighted in which CD is often linked to externalizing behaviour problems such as aggressive behaviours and law breaking acts. Since CD permits individuals to rationalize the antisocial attitude, maladaptive beliefs, and irrational thoughts, it often leads to a range of problems and behaviours. According to Barriga, Gibbs and colleagues, individuals with high levels of CD are more likely to express aggression and other types of antisocial behaviour.

In addition, SSCD is said to be elevated within the offender population such as adolescents who have committed sexual offenses. Notably, research by Murphy has shown that child molesters exhibit a wide range of CD such as denial, minimization, justification, and rationalization of their offending behaviour. Previous researches have also indicated that CD is strongly associated with child sexual abuse.

The available evidence indicates that CD has been observed among the younger age group who are dispositioned towards delinquency. For example, research had noted higher CD among juvenile delinquents than non-delinquents. Previous studies provided more support for this assertion. Furthermore, the excessive use of CD tend to result in psychopathology.

Theoretically, it was suggested that CD is able to block moral judgment development which makes the person think of being not responsible for any type of behavioural problems that are exhibited by him or herself. This rationalization is the foundation for the direct relationship between CD and criminal behaviour. CD, representing some symptoms of SSCD; is often labeled as antisocial attitudes and is a criminogenic marker which insulate the individual from blame or a negative self-concept.

In Malaysia, there are no Malay language validated psychometric instrument to access the level of CD among test takers. Early screening and intervention is highly recommended in order to ameliorate high levels of CD among test takers as it can lead
to antisocial behaviour and other criminogenic behaviour. As suggested by Sestir and Bartolow\textsuperscript{37}, understanding the level of cognition is important in order to obtain a fuller understanding of the nature of human aggression and violence.

In the first part of this study, two types of translations were carried out by a group of bilinguists. The outcome of translations seem to be promising and good. Amendments were made to ambiguously worded and colloquial items which might confuse participants. Meanwhile, the outcome of content and face validity also evidenced good outcomes as the feedbacks from experts and the general public were good. However, a few items were restructured in terms of sentencing and vocabulary.

Preliminary analysis commenced prior to construct validity. The preliminary analysis seems to be satisfactory and fulfilled all the requirements for sampling adequacy. The KMO values was considered good since they exceed the recommended value of 0.60\textsuperscript{30}. The Bartlett’s Test of Sphericity was highly significant suggesting that data is appropriate to proceed with factor analysis.

The EFA using PCA showed that the factor loadings of the items in HIT-M did not correspond to the original domains of HIT. While the original HIT demonstrated four domains, the initial factor loadings in this present study revealed eleven factors. In order to reflect the theoretical construct of SSCD, the items were extrapolated into four factors.

The four factors were self-centered, blaming others, minimizing/ mislabeling, and assuming the worst. The factors were identified based on the number of items that were highly loaded into each factor. With this in mind, Factor 1 was identified as self-centered, Factor 2 as blaming others, Factor 3 as minimizing/ mislabeling and Factor 4 as assuming the worst.

However, some items were found to be highly loaded into different factors compared to the original scale. For example, item 21 (minimizing/ mislabeling) was categorized in self-centered instead of the original minimizing/ mislabeling. Meanwhile, items 36 and 37 (assuming the worst) showed high factor loadings in the factor blaming others.

In addition, item 32 (assuming the worst) showed higher factor loading in the factor minimizing/ mislabeling instead of the original factor assuming the worst. Other items such as item 20 (minimizing/ mislabeling), item 11 and item 16 (blaming others) evidenced higher factor loading in the factor assuming the worst. The cultural context could be one of the reasons that may explain why certain items highly loaded into different factors compared to the original factors.

The content of each items that loaded in different factors compared to the original factors were checked properly prior to their inclusion in a new factor. Prior to the omission and inclusion of any items, the items were carefully analysed in terms of content and factor loadings. From this process, the final domains in HIT-M consisted of six items each. The higher factor loadings of each item in every domain indicated good relationship to the particular domain of HIT-M.

Internal consistency which examines the average inter-item relationship of the items of any scale is very important as it measures
the degree to which the items are related to each other \(^3\). According to Peat et al. [39], a cut-off alpha value above 0.70 is considered good in the field of social science. The reliability of HIT-M was measured with internal consistency reliability using Cronbach’s alpha. It is worth to note that all the reliability values for each domain exceeded the cut-off alpha value as recommended by Peat et al. \(^3\).

As such, it can be concluded that HIT-M is a reliable psychometric instrument. In this validation study, researchers were aware of the importance of test-retest reliability. However, the researchers could not perform the test-retest reliability as permission was not granted by prison authorities due to the level of accessibility and dangerousness of the inmates. Some of the inmates had also been released from prison.

The good psychometric properties featured by HIT-M indicate that HIT-M is a viable psychometric instrument to measure and access CD among Malaysians. As a result, various types of cognitive intervention programs can be offered to those who exhibit high levels of CD. In fact, previous researches \(^4\) have acknowledged the role of cognitive-behavioural programmes as efforts to reduce antisocial behaviour among people at-risk. One of the example of cognitive-behavioural programme is Cognitive-Behaviour Therapy (CBT) which was considered among the promising rehabilitative treatments for the offenders. Currently, in Malaysian prisons, CBT is part of an intensive rehabilitation programme for sexual offenders \(^4\). Therefore HIT-M can serves as a screening tool to assess the level of CD in order to offer the proper cognitive-behavioural treatment to those at-risk individuals.

**Conclusion**

The result of this study contribute to HIT literature. As a conclusion, HIT-M is a valid and reliable psychometric instrument to measure and assess CD among Malaysians. It is expected that many individuals will benefit by having this HIT-M. It is highly recommended to use this HIT-M in Malaysian settings such as in education, psychological assessment, government sectors, employee recruitment, and counseling for screening and rehabilitation purposes.

**Acknowledgment**

The authors would like to express their sincerest gratitude and thanks to Universiti Sains Malaysia and the USM Vice Chancellor Award Programme for supporting this study. Appreciation is also extended to the Malaysia Department of Prisons for allowing the researchers to conduct this study. Due acknowledgement is also made to Research Press for allowing the translation and validation of the questionnaire into Malay language. The authors also thank Prof. Khaidzir Hj Ismail, Ms. Nurul Hazrlna Mazlan, and Ms. Siti Khairina for their assistance and support.

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Psychometric Properties of the 3-Item Oslo Social Support Scale among Clinical Students of Bayero University Kano, Nigeria

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Abstract

Background: Several researchers have shown that the type of social support available to individuals can predict their mental wellbeing. Many standard measures of social support abound in Euro-American societies but none has been validated for use in Nigeria. The aim of this study is to demonstrate the internal consistency and concurrent validity of Oslo 3-item Social Support (OSS-3) scale in a Nigerian population. Methods: The study was conducted among Clinical students of Bayero University Medical School (N=70). The Oslo 3-item Social Support (OSS-3) scale and the depression sub-scale of the Hospital Anxiety Depression Scale (HADS) were administered to each of the participants. The HADS scores were compared across different subgroups of OSS-3 and psychometric properties of internal reliability, and concurrent and discriminate validities were assessed using SPSS version 16. Results: The participants were between 18 and 34 years of age with mean O3SS score of 11.70. Females had (11.95) higher mean scores than males (11.58). The internal consistency of OSS-3 was low with a Cronbach’s alpha coefficient of 0.50. The concurrent validity of OSS-3 with the depression sub-scale of Hospital Anxiety Depression Scale (HADS) was low but significant and inversely related (r = -0.3; p = 0.011). The discriminate validity was good and was shown by the significant difference between mean OSS-3 of HADS-depression sub-scale cases compared to non-cases (t-test = 6.710; p = <0.0001). Conclusion: We concluded that the OSS-3 is a potential measuring scale useful in determining range of social support available in these Nigerians.

Keywords: Psychometric Properties, Oslo Social Support, Clinical Students, Kano, Nigeria
Introduction

Social support is defined as the physical and psychological comfort provided by other people\(^1\), and understood to be an integral part of our psychological make-up of always wanting to affiliate with others\(^2\). It is further recognized as the implicit aspect of affiliation\(^3\) and conceptualized into friendliness, socialization, close interaction, cooperativeness, positive communication and lovingness. Thus, social support serves to nourish our social hunger on to health or illness as several researches had shown\(^4-9\). These obviously supports the identification of social support as one of the two pillars of social capital with the other being social leverage\(^10\-12\).

The impacts of social support is health-wise operationalized into structural\(^13\) and functional\(^14,15\) domains. The structural dimension of social support is the quantity of the support in terms of network size and frequency of social interactions. The functional dimension is the quality of social support that is further divided into two parts of emotional (as in receiving love and empathy) and instrumental/practical help (like the gifts of money, assistance with child care or with house choirs). Hence, social support can come in many forms as emotional support, social connectedness, feeling needed, reassurance of self-worth, reliable support, advice and information, and physical and material assistance\(^16\).

The two major pathways through which social support influence health and illness are the biologic and behavioural mechanisms\(^17\). The biological mechanism is studied through its effects on pro-inflammatory biomarkers like IL-6\(^18\), and the mapping of brain areas that may orchestrate this by the use of functional MRI\(^19\). The behavioural pathway motivates towards positive health behavior utilization and adherence\(^20,21\).

The positive effect of social support is attainable through its direct effect as being health promotive irrespective of life situation and secondly, the buffering effects that are registered in the presence of stressors\(^22\). This has lead to targeted modification of poor social support as co-central to the attainment of biopsychosocial management of mental disorders in its aetologic, curative, preventive and promotive domains\(^4\-6,9,23\-25\). The objective attainment of the interventional approaches has been part achieved through development of social support measuring scales. These scales in a review by Health Scotland\(^26\) were grouped into four approaches of providing social functioning. The first sets of scales were categorized as interpersonal trust which is an individual’s ability to engage in social interaction (e.g. Interpersonal Trust Questionnaire by Forbes and Roger\(^27\)). The second and third groups of scales respectively focused on how individual perceived the presence or absence of social support (e.g. Perceived Social Support from Friends and Family by Procidano and Heller\(^28\)) and the particular functions they served (e.g. Oslo 3-item Social Support [OSS-3] by Dalgard\(^29\)). The last sets of scales measures the quantity and satisfaction individuals can benefit from social networks (e.g. O3SS by Dalgard\(^29\); and Social Support Questionnaire by Sarason et al\(^30\)). The Health Scotland do however reported the quantity of social support as poor predictor of mental health compared to other forms of social functioning. The O3SS is not only a less than a minute 3-item measuring scale to fill, but also provides overall assessment of social support as it seems to share all the characteristics of these four approaches to categorizing social functioning.
Many of these standard scales abound in Euro-American societies but none has been validated for use in the Nigerian society according to information available to the authors. It is with this realization that we proposed to validate the 3-item Oslo Social Support Scale (OSS-3) as a tool to assess the availability and range of social support in clinical students of Bayero University Kano, Nigeria.

**Methods**

**Place of Study**
The Bayero University Kano (BUK) is a second generation Federal University in Nigeria with two campuses. The old campus offer predominantly core science-based courses of study while the permanent site offers predominantly arts and social science-based courses. The new campus also serves as the seat of administrative activities of the university.

**The Instruments**

**The Oslo 3-items Social Support Scale (OSS-3)**
The OSS-3 provides a brief measure of social functioning and it is considered to be one of the best predictors of mental health. It covers different fields of social support by measuring the number of people the respondent feels close to, the interest and concern shown by others, and the ease of obtaining practical help from others. Its structure and reliability (Cronbach’s alpha of 0.60) have not been well-documented despite widespread use in several European countries. Nonetheless, its brevity and the availability of normative data are strong considerations. The OSS-3 scores ranged from 3-14 with a score of 3-8 = poor support; 9-11 = moderate support; and 12-14 = strong support.

**The Hospital Anxiety and Depression Scale (HADS)**
The Hospital anxiety and depression scale (HADS) is a portable easy to administer measure that screens for the presence of anxiety or depressive state of both clinical and non-clinical population. It consists of seven depression items and seven anxiety items and has been validated for use in Nigeria. A score of 8 and above on either of the two components is regarded as case and is applicable in the current study population. For the purpose of this study, the depression subscale was used.

**Study Participants and Procedure**
The participants were 91 fourth year clinical students of Faculty of Medicine, Bayero University Kano. The minimum sample size was 69 as determined by Raosoft Inc online sample size calculator, at 50% response distribution and 90% confidence interval. All the students were invited to participate after obtaining informed consent from them. All the measuring scales were administered to them after a major professional examination.

**Statistical Analyses**
The results were coded and analysed using SPSS version 16 statistical package. The psychometric properties of OSS-3 was determined as follows: Cronbach’s alpha was used to determine the internal validity of OSS-3, the Pearson’s correlation coefficient for concurrent validity of OSS-3 and the HADS depression subscale and t-test for the discriminate validity of the mean OSS-3 scores of HADS cases compared to non-cases. All statistical evaluations was determined at 2-tailed, with p value <0.05 considered as significant.
Results

Seventy of the 90 clinical students had completed questionnaire. Of these 70 clinical students, 47 (67.1%) of them were males and majority (64/91.4%) were single. As shown in Table 1, the participants mean age was 22.5 years (SD = 0.6) with age range between 18-34 years.

Table 1. Socio-demographic variables of respondents

<table>
<thead>
<tr>
<th>VARIABLE</th>
<th>FREQUENCY (n = 70)</th>
<th>PERCENTAGE (n = 100%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age group in years</td>
<td>&lt;20 3</td>
<td>2.5</td>
</tr>
<tr>
<td></td>
<td>20-24 79</td>
<td>64.8</td>
</tr>
<tr>
<td></td>
<td>25-29 35</td>
<td>28.7</td>
</tr>
<tr>
<td></td>
<td>30-34 5</td>
<td>4.1</td>
</tr>
<tr>
<td>Age range is from 18 to 34 years</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>Male 47</td>
<td>67.1</td>
</tr>
<tr>
<td></td>
<td>Female 23</td>
<td>32.9</td>
</tr>
<tr>
<td>Marital status</td>
<td>Single 64</td>
<td>91.4</td>
</tr>
<tr>
<td></td>
<td>Married 6</td>
<td>8.6</td>
</tr>
</tbody>
</table>

The mean OSS-3 score was 11.70 and that by gender was 11.58 and 11.95 for males and females respectively. The Cronbach’s alpha coefficient for the OSS-3 was 0.5. The depression subscale of Hospital Anxiety Depression Scale (HADS) screened 22 (31.4%) of the participants as cases and the rest as non-cases (48/68.6%).

The distribution of the HADS depression subscale according to their Oslo Social Support Scale (OSS-3) grouping is shown in Table 2. Table 2 also shows the mean depression score of cases to non-cases as 10.6 to 3.0 respectively. The difference in mean was statistically significant (t-test = 6.710; p = <0.0001). The mean depression score among cases decreases progressively with increasing social support score and is depicted in figure 1.

Table 2. Cross tabulation of OSS-3 grouping with HADS depression subscale

<table>
<thead>
<tr>
<th>OSS-3 GROUPING</th>
<th>CASES (n/%)</th>
<th>NON-CASES (n/%)</th>
<th>mean score</th>
<th>mean score</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>2 (2.9)</td>
<td>15</td>
<td>1 (1.4)</td>
<td>3.0</td>
</tr>
<tr>
<td>MODERATE</td>
<td>5 (7.1)</td>
<td>11.6</td>
<td>7 (10.0)</td>
<td>3.2</td>
</tr>
<tr>
<td>HIGH</td>
<td>15 (21.4)</td>
<td>9.7</td>
<td>40 (57.1)</td>
<td>3.0</td>
</tr>
<tr>
<td>TOTAL</td>
<td>22 (31.4)</td>
<td>10.6*</td>
<td>48 (68.6)</td>
<td>3.1</td>
</tr>
</tbody>
</table>

* T = 6.71, p < 0.0001

The correlation of OSS-3 with HADS depression subscale was significant and of inverse relation (r = -0.3; p = 0.011). Figure 2 showed the gender distribution of social support and depression by their mean scores. This figure shows that females had higher social support as well as experience more depression than their male counterpart.
**Discussion**

The present study evaluates the validity of Oslo Social Support scale (OSS-3) as a good measure of the various range of social support available in this Nigerian sample. The reliability coefficient of OSS-3 in this study though falls into the relatively low range but it is acceptable according to George and Mallery\(^{36}\), and this low value is comparable to that found in Europe\(^{33}\). The low Cronbach’s alpha has been described by Dalgard\(^{33}\) as not reflecting necessarily a low reliability but a demonstration of OSS-3 multidimensionality.
Secondly, the concurrent validity of OSS-3 with HADS depression subscale showed a fair degree of inverse association. This may be because high social support has been demonstrated in a previous study to be promotive of positive mental health as they buffer against the harmful effects of negative life events\textsuperscript{29}. Thus, the negative and yet weak correlation from this study can be said to concur and be contributory to previous western studies that social support is inversely related to psychological distress, morbidity and mortality\textsuperscript{6-9,37}.

The present study also showed a higher OSS-3 mean score in women compared to the men’s scores and this is similar for four of the five European countries studied by Dalgard\textsuperscript{38}. However, this positive finding does not seem to be more protective for the female against depression as they recorded higher depression mean scores compared to their male counterpart. This suggests either that the social support of the females in this study might not be qualitative enough to buffer them off depressive symptoms considering the relatively weak correlation of OSS-3 with HADS-depression subscale. Or other factors rather than the social support may account for this gender-based disparity in the study when the significant discriminate validity showed that non-case participants to have higher OSS-3 mean scores when compared with cases having lower scores.

In addition, the mean OSS-3 scores of the study’s participants were higher than that of Spain participants who scored highest in the European study\textsuperscript{38}. The non individualistic nature of the Nigerian society may account for this, which Kasule\textsuperscript{39} identified as the protective value of the extended family that provides care for at least three generations. This perhaps may be reflecting why the Nigerian National Mental Health Survey\textsuperscript{40} reported a lower depression rate (3.2%) compared to the cross-national epidemiology of depression\textsuperscript{41} (excluding Nigeria) with ranges of 14.6 % - 5.5% and 11.1% - 5.9% respectively for both the high-income and low to middle income countries.

This study however has some limitations despite its relative strengths shown above. The process of participants’ selection that were majorly unmarried, their relative small size and their high intelligence are some of the limitations of the study. Others were the identification of cases in this study through use of screening instrument rather than diagnostic measuring scales, the study design of cross-sectional analysis which eliminates causation in the correlation, and the non utilization of other known standardized social support scales in determining the concurrent validity of OSS-3 which from this study is in the moderately low range. Furthermore, the study participants cannot be truly representative of the multi-ethnic nature of Nigerians. Despite these limitations, this study demonstrates that the OSS-3 is a short and valid measuring scale to determine the level of social support of Nigerians. And being a short instrument, it will serve better for research purposes and in assessing practitioners’ impact on social interventions.

**Conclusion**

The results of this study clearly demonstrates that the Oslo Social Support scale (OSS-3) has an acceptable but low multi-diverse internal consistency, relatively low concurrent validity which correlates negatively with depressive symptoms, and discriminates well against psychological distress. All these validate the usefulness of the OSS-3 as a measuring scale to help in determining the range of social support present in these Nigerians.
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ORIGINAL PAPER

Perceived Social Support, Stress and Gender Differences among University Students: A Cross Sectional Study

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Abstract

Background: The transition from high school to a university is a significant milestone in every student’s life. Stress experienced by students can have a detrimental effect on their academic performance. Social support has generally been found to promote psychological well-being, as well as to buffer the effects of stress. 

Method: The study was conducted in one of the Universities in Malaysia. The study questionnaire was designed to include questions regarding socio-demographic aspects and stress of the students; in addition, the Multidimensional Scale of Perceived Social Support scale (MSPSS) that was developed by Zimet was administered. The main aim of this study is to investigate the relationship between Perceived Social Support, Stress and Gender differences among University Students.

Results: In this study only a small group of the students scored very low on the Perceived social support scale. A low significant inverse correlation was found between MSPSS and stress. Male students’ experienced greater stress than female students’. Female students had a better perception of social support from their families compared to male students.

Conclusion: The fact that, as the level of social support increase the level of stress decrease clearly shows that social support acts as a buffer to stress.

Keywords: Perceived Social Support, Stress and Gender

Introduction

The transition from high school to a university is a significant milestone in every student’s life. This transition is a time of separation which requiring an adjustment on the part of the student and his family. Life transitions, such as university attendance, entail the reconstruction of relations between the individual and the environment¹. Transitions can be stressful as it requires coping skills to adjust to the new environment and life style. The students may have to struggle with issues of developing competence and identity to the new environment, which could be stressful.

Social support is an important element in
students’ life. Social support is a cognitive perception on how an individual perceives the quality of support. The beneficial impact of social support has been associated with both physical and mental health outcomes.

Social support is closely related to ties with family, friends, neighbours, and others of significance to the person which includes empathy, concern, caring, love, and trust. The support from family and friends were found to be one of the factors that can influence students’ academic achievement. Gurung refers social support as the experience being valued, respected, cared about, and loved by others who are present in one’s life. Social support has generally been found to promote psychological well-being, as well as to buffer the effects of stress. It is important to see how social influences impact the stressful experiences in the lives of students. Perceived social support and physical health are two very important factors help the overall well-being of the individual.

The absence of social support shows negative influence on health. The presence of social support helps individual's ability to cope with stress. In a study done by Aris Safree Md Yasin, revealed that there were significant negative relationship between social support and psychological problems suggesting that the higher the social support, the lower is the psychological problem.

Social support has been positively correlated with lower levels of overall stress in college students. Stress can be defined as any circumstances that threaten or are perceived to threaten one’s well-being and thereby tax one’s coping abilities. One form of stress that is constantly being experienced by college students is, stress in relation to academic concerns. Academic stress mainly comes from time management, assignments, exams, interpersonal relations, social support, addictions, and career explorations.

Support such as emotional, academic, and financial are tremendous factors in the success of a college student. Some studies have shown that the amount of social support from the university and outside contributors like family, friends and mentors can make a huge impact on a student’s success.

According to Lazarus, perception of stress depends on the person’s appraisal of the event and the resources the person has in coping with the event. Solberg emphasised the importance of social support, he stated that those who have a high perception of social support experienced less stress. Lack of social support is related to psychological problems such as depression and anxiety. Social support reduces the adverse psychological impact of exposure to stressful life events and on-going life strains.

The study of perceived social support among students has several significance, it not only allows the understanding of the relationship between mental and physical health but also perceive their own function and their interaction with the environment. The measurement of social supports is critical to investigators interested in the study of social and interpersonal processes that moderate outcomes of mental health interventions.

Social integration during periods of high life stress may not only provide sustenance for the psychological well-being of an individual, but might also have a positive impact on a variety of discrete health outcomes.

It is well-known that the sexes differ in their need, use, and provision of social support,
with women typically both requiring and providing more social support than men. The main aim of this study is to investigate the relationship between Perceived Social Support, stress and gender differences among university students.

Methods

Participants
The study was conducted in one of the Universities in Malaysia. The undergraduate students who volunteered to participate in the study were explained about the purpose of the study and implications. The students were assured anonymity and were told to respond honestly. Study was approved by university research committee.

Study design
Questionnaire, and Instrument-rated. The study questionnaire was designed to include questions regarding socio-demographic aspects and stress of the students; in addition, the Multidimensional Scale of Perceived Social Support scale (MSPSS) that was developed by Zimet was administered. It is a 12-item scale of adequacy of social support from three specific areas namely family, friends, and significant others. Each of the 3 areas has 4 subscales. Items were measured on 7-point scale from 1 ‘very strongly disagree’ to 7 ‘very strongly agree’. The MSPSS evaluates perceived social support (PSS) from family (FA), friends (FR), and significant others (SO) and quantifies the degree to which respondents perceive support from each of these three sources, namely FA, FR and SO. Lower scores suggest lower perception of social support, while higher scores propose higher perception of perceived social support. Scores are derived by summing the individual items and dividing by the number of items. The MSPSS has very good internal consistency with reported alpha coefficients of 0.91 for the total score and 0.90 to 0.95 for each of the three subscales.

Respondents indicated whether or not they had experienced stress over a period of past 6 months. Five stress related items were listed, problem with parents, problem with close friend or close relationship, academic problems, financial problems and other personal problems. The respondents had to tick mark in which area they felt very stressful. Weighed scores were used to define the level of importance of criteria. The final score was calculated by summing the weighed category scores and dividing by the sum of the category weighs. Scores ranged from 5 to 25.

Sample
The questionnaire and the MSPSS were distributed in class and were collected back upon completion. 480 students were asked to complete the questionnaire only 313 questionnaires were complete in all respects. (Completion rate=65.2%).

Analysis
SPSS version 17 was used to analyse the data.

Results

Demographic Characteristics of students
63% were female students and 37% were male students. Age ranged from 19 to 24 years with a mean age of 19 years. In the age group 19 to 20 years, 30% were female students and 26% were male students, while in the age group 21 to 25 years, 23% were female students and 21% were male students. A vast majority (51%) were studying in the first year, 31% in the second year and 18% in the third year.
**Stress**

As seen in Figure 1, 26% of the students had stress related to their parents, 12% had stress related to friend or close relationship, 16% had academic stressors, 12% had stress related to their financial problems and a vast majority 34% had other personal factors.

**Age and Stress**

Those in the age group 19 to 20 years experienced higher stress levels (mean =15.72) compared to those in the age group 21 to 24 years (mean =12.94) (t=2.16 p<0.05).

**Gender and Stress**

Male students experienced greater stress (mean=14.55) than female students (mean=13.86) however, t test was not significant.

**Social Support**

In this study the least score on the MSPSS was 2 and the maximum score was 7. ($x^2 = 5.3$, SD=1.13). 5% of the students scored low on the social support scale in the range of (2 to 3). 45% were in the average range (4 to 5). Majority (50%) scored high on the social support scale range (6 to 7).

**Gender and Perceived Social Support**

<table>
<thead>
<tr>
<th>Social Support</th>
<th>Gender</th>
<th>Mean</th>
<th>t-value</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family</td>
<td>Female</td>
<td>5.78</td>
<td>4.45</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>4.74</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Friends</td>
<td>Female</td>
<td>5.20</td>
<td>1.17</td>
<td>0.24</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>5.04</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Significant</td>
<td>Female</td>
<td>5.05</td>
<td>0.71</td>
<td>0.45</td>
</tr>
<tr>
<td>Others</td>
<td>Male</td>
<td>4.92</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
As seen in Table 1, female university students had a higher perception of social support from their families compared to male students. There was no significant association observed in the way male and female students perceived social support from their friends and significant others.

**Correlates**

It was intended to see whether MSPSS correlates with stress. A low inverse correlation was found between MSPSS and stress. $R = -0.43$ (p<0.01).

**Discussion**

College students are at critical period when they will enter early adulthood. They not only have to adapt to changes in the transition but also stress in the society. Stress experienced by students can have a detrimental effect on their academic performance. Student in the age group 19 to 20 years who were in the first year perceived stress higher than those in the age group 21 to 24 years, who were in the 2 and 3 year. ($t=2.16$ p<0.05). In general, the source of stress was troubled relationship with parents, and other day to day issues such as food, transport and living conditions. Stresses caused by personal factors are from defects of personal psychology, behavior, and family conditions. These factors include interpersonal communication, self-care ability, and family conditions. Most students agree that bad relationship with classmates, roommates, and friends of opposite sex will produce stresses. Another reason for stress among the first year students may be that they were away from home and had difficulty in adjusting the new environment. In a similar study done by Nelson et al, it was found that first and fifth year students experienced higher stress compared to students in the middle years. The reported that the first year students experienced more stress because of major life transitions from high school to university, while fifth-year students may have fears about life decisions after graduation. Wen in his paper emphasizes on the students stress management abilities which will enable them to live a healthy life after entering the society.

Several studies have highlighted the relationship between social support and stress among university students. Knowledge on how social support could help students to excel in study and cope with any psychological disturbances, much information could be derived to enhance the amount of support provided. Social support may be described as, having a family and a network of close friends who provide social and emotional attachment, and the feeling of being able to depend on them for all physical and emotional needs. In this study, a small group (5%) of the students scored low on the Perceived Social Support scale.

One of the objectives of this study was to find the relationship between stress and perceived social support among university students. A low significant inverse correlation is seen between stress and perceived social support $r = -0.43$ (p<0.01). $R^2 = 0.18$. This indicates that the university students who perceived higher social support had lower perception of stress. The extent of variance explained is 18%. The results from this study is similar to the finding from a study done by Deihl et al, who reported a correlation between high perception of social support and low levels of stress.

Perceived social support and coping capabilities are important predictors which give an insight into how different individuals deal with stressful situations in...
life. Studies have reported that different genders address the variables differently. Gender is an important influence on support-relevant social interactions. It may be postulated that, the perceived social support would not differ gender wise, however ANOVA (F=15.28, p<0.000) showed that there is a significant difference on how the male students perceived social support from the female students. In other words, the perceived social support was not the same for male and female students.

Female students had a higher perception of social support from their families compared to male students. This indicates that female students were close to their family and probably the families were protective. The findings of this study is similar to the study done in Malaysia by Tam et al, they reported that females perceived significant higher social support than males. Perhaps the male students had negative experiences with their family. Studies done by Gayman et al indicated that early family experiences, especially negative experiences, were associated with lower perceived family and friend support in young adulthood.

In this study, it was observed that female students perceived social support from friends more than male students however; t-value does not show significance. Findings from a study done by Mitchell et al showed that female adolescents reported more support from friends. In a study done by Ramaswamy et al, it was found that girls, compared to boys, perceived friends as providing more social support. It is likely that female students socialized better than male students in seeking help and social support from friends. Gender differences in the structure of perceived social support can be explained by socialization experiences and social roles associated with gender.

In this study no difference was seen between gender and significant others. May be the students did not depend on significant others to meet their emotional needs. Due to lack of significant social support among male students it was observed that they had a higher level of stress compared to female students. It appears that, they may have been rejected by their family and friends.

In sum, this study investigates the relations between social support, stress and gender. Some of the major findings are; students studying in the first year experienced more stress compared to those in the second and third year. Several sources of stress were identified such as stress arising from having difficulties with parents, academic problems, financial problems, other personal problems. The fact that, as the level of social support increase the level of stress decrease, clearly shows that social support acts as a buffer to stress. Female students had a better perception of social support from their families compared to male students and as a result the male students experienced higher levels of stress. Although the protective role of social support is well established in the health literature, antecedents of perceived social support are not well understood.

Findings from this study indicate the need to further explore the social support system in universities. One of the limitation of this study was no standardized scale was used to measure stress.

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Depressive Symptoms Among Siblings of Paediatric Outpatients at University Malaya Medical Centre

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Abstract

Depressive symptoms exist within the paediatric population. Nonetheless, clear clinical manifestations are often absent in this group. Objective: This study aimed to describe the prevalence and correlates of depressive symptoms among siblings of paediatric outpatients. The outpatients presented for acute complaints only. Methods: This was a cross-sectional study, with data collected over a 16-month period (April 2010 to July 2011). Participants were siblings of paediatric outpatients at University Malaya Medical Centre (UMMC), a tertiary hospital in Kuala Lumpur. They were recruited via convenience sampling. They were classified into high, average and low scores based on their responses to questions in the Children’s Depression Inventory (CDI; T-score >55: high, T-score 45-55: average; T-score <45: low). Children with high scores were considered to have depressive symptoms. Results: There was a response rate of 93%. One hundred (100) participants were recruited, aged 7 to 17 years and comprised of forty one (41) females and fifty nine (59) males. Twenty seven percent (27%) had high CDI scores. Death of a first degree relative within the past year significantly affected depressive scores (p < 0.05). Conclusion: It is imperative to acknowledge the existence of depressive symptoms among apparently well children.

Keywords: Depressive Symptoms, Siblings, Paediatric, Death of First Degree Relative

Introduction

The rates of detection of depressive symptoms in the paediatric population are lower than the actual prevalence1. Although children may not fulfill the clinical diagnostic criteria for depression, it has been estimated that as many as 2% of children and 4-8% of adolescents have depression within the population of the United States of America2. A study among Australian children revealed that one in five children (20%) aged 4 to 17 years had significant mental health problems3. There is no comparable data currently available for the Malaysian paediatric population. However, the occurrence of clinical depression among the general Malaysian population is 2%4.
The purpose of this study is to describe the prevalence of symptoms of depression among siblings of paediatric outpatients, as well as to identify associated risk factors.

Methods

The study was a cross-sectional survey conducted over a period of 16 months, between 1st April 2010 to 6th July 2011, among siblings of patients attending the paediatric outpatient clinics at the University of Malaya Medical Centre (UMMC), for acute complaints. UMMC is a tertiary university hospital in Kuala Lumpur.

Ethical approval was obtained from the Medical Ethics Committee of University Malaya Medical Centre prior to commencement of the study.

Well siblings, aged 7-17 years, of paediatric patients attending UMMC outpatient clinics during the study period were included in the study. Exclusion criteria were the presence of any chronic illness, developmental delay, developmental regression, reading difficulties and the need for long-term medication or medical follow-up.

The presence of depressive symptoms was documented using a validated Malay language version of the original Children’s Depression Inventory (CDI) by Maria Kovacs5. The Malay language version was validated by Rosliwati, M.Y., et al.6 in 2008 in a study conducted among paediatric outpatients in Kota Bharu, Kelantan located on the east coast of Peninsula Malaysia.

The CDI consists of 27 items that each subject answered by choosing one of three responses he / she considered most accurate as an indicator of his / her feelings over the previous two weeks. A total score was obtained by adding up the subject’s answers to all items, which encompassed questions reflecting negative mood, interpersonal problems, ineffectiveness, anhedonia and negative self-esteem. Based on the scores, subjects were classified into those with high, average and low degrees of depressive symptomatology (CDI; T-score >55: high, T-score 45-55: average; T-score <45: low).

The CDI questionnaires were completed by all subjects in the presence of the same researcher (S.J.) to prevent inter-observer bias. Another questionnaire pertaining to socio-demographic information was filled in by the subject’s parents. The data was analysed using the Statistical Package for Social Sciences (SPSS).

Results

One hundred and seven (107) subjects fulfilled the criteria for inclusion into the study. The response rate was 93% (100). Of the one hundred study participants, forty one (41) were females and fifty nine (59) males. Sixty eight (68) were aged 7 to 12 years and thirty two (32) were 13 to 17 years old. The ethnic distribution was: 58 Malays, 9 Chinese, 32 Indians and 1 Caucasian.

More than a quarter of the subjects (27%) had high scores for depressive symptoms (CDI T-score >55). The majority (39%), however, had average scores (CDI T-score: 45-55), while 34% (34) had low scores (CDI T-score <45). For the five standard subscales: negative mood was found in 26% (26) of subjects, interpersonal problems in 35% (35), a feeling of ineffectiveness in 25% (25), anhedonia in 31% (31) and negative self-esteem in 13% (13).

The distribution of scores by age group is shown in Figure 1. There were no significant differences between subjects aged 7 to 12 years and those aged 13 to 17 years with
regards to the prevalence of high scores for depressive symptomatology (p = 0.48). Boys also did not differ significantly from girls in their scores (p = 0.38).

Figure 1. Distribution of CDI T-scores by age.

*CDI T-scores: >55: high, 45-55: average; <45: low

Risk Factors for Depressive Symptoms

Tables 1 and 2 show the degree of depressive symptoms according to various risk factors. Of all the risk factors analysed the only statistically significant risk factor was: death of a first degree relative within the past year (p < 0.05).

Among the 27 subjects with a high degree of depressive symptoms, nine (33.3%) suffered the loss of a first degree relative within the past year. Of the 73 with average / low depressive symptoms, only ten (13.7%) experienced a similar loss. This difference was found to be statistically significant (p < 0.05).
<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Degree of Depressive Symptoms</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Death of a first degree relative within the past year:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>9/27 (33.3%)</td>
<td>0.03</td>
</tr>
<tr>
<td>No</td>
<td>18/27 (66.7%)</td>
<td></td>
</tr>
<tr>
<td>Diagnosis of severe illness in a first degree relative in the past year:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>6/27 (22.2%)</td>
<td>0.15</td>
</tr>
<tr>
<td>No</td>
<td>21/27 (77.8%)</td>
<td></td>
</tr>
<tr>
<td>Medical or psychiatric illness in the family:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>11/27 (40.7%)</td>
<td>0.12</td>
</tr>
<tr>
<td>No</td>
<td>16/27 (59.3%)</td>
<td></td>
</tr>
<tr>
<td>Presence of first degree relatives with psychiatric illness:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>0/27 (0%)</td>
<td>0.54</td>
</tr>
<tr>
<td>No</td>
<td>27/27 (100%)</td>
<td></td>
</tr>
<tr>
<td>Presence of second degree relatives with psychiatric illness:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>0/27 (0%)</td>
<td>0.29</td>
</tr>
<tr>
<td>No</td>
<td>27/27 (100%)</td>
<td></td>
</tr>
</tbody>
</table>

* High CDI T-score: >55
† Average / Low CDI T-score: ≤55
Table 2. Degree of depressive symptoms according to patient-related and socio-economic factors.

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Degree of Depressive Symptoms</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High* (n = 27)</td>
<td>Average / Low† (n = 73)</td>
</tr>
<tr>
<td>Age category:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 – 12</td>
<td>16/27 (59.3%)</td>
<td>52/73 (71.2%)</td>
</tr>
<tr>
<td>13 - 17</td>
<td>11/27 (40.7%)</td>
<td>21/73 (28.8%)</td>
</tr>
<tr>
<td>Gender:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>14/27 (51.9%)</td>
<td>45/73 (61.6%)</td>
</tr>
<tr>
<td>Female</td>
<td>13/27 (48.1%)</td>
<td>28/73 (38.4%)</td>
</tr>
<tr>
<td>Existence of close friendship(s):</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>25/27 (92.6%)</td>
<td>68/73 (93.2%)</td>
</tr>
<tr>
<td>No</td>
<td>2/27 (7.4%)</td>
<td>5/73 (6.8%)</td>
</tr>
<tr>
<td>Marital status of parents:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>25/27 (92.6%)</td>
<td>69/73 (94.5%)</td>
</tr>
<tr>
<td>Not married</td>
<td>2/27 (7.4%)</td>
<td>4/73 (5.5%)</td>
</tr>
<tr>
<td>Father’s education level:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tertiary</td>
<td>6/27 (22.2%)</td>
<td>23/73 (31.5%)</td>
</tr>
<tr>
<td>Non-tertiary</td>
<td>21/27 (77.8%)</td>
<td>50/73 (68.5%)</td>
</tr>
<tr>
<td>Mother’s education level:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tertiary</td>
<td>7/27 (25.9%)</td>
<td>29/73 (39.7%)</td>
</tr>
<tr>
<td>Non-tertiary</td>
<td>20/27 (74.1%)</td>
<td>44/73 (60.3%)</td>
</tr>
<tr>
<td>Father’s occupational grade:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Professional</td>
<td>0/27 (0%)</td>
<td>8 (11%)</td>
</tr>
<tr>
<td>Non-professional</td>
<td>27/27 (100%)</td>
<td>65/73 (89%)</td>
</tr>
</tbody>
</table>
**Discussion**

The aims of this study were to ascertain the prevalence of depressive symptoms among siblings of paediatric outpatients of UMMC and to elucidate the significant risk factors for the presence of such symptoms.

The results showed that a large proportion of subjects (27%) had high scores for depressive symptoms although they were not formally assessed for clinical depression.

Interpersonal problems was the most common issue for the study group closely followed by anhedonia. The percentages of respondents with high depressive symptoms for the five components of the CDI were: 26% (Negative Mood), 35% (Interpersonal Problems), 25% (Ineffectiveness), 31% (Anhedonia) and 13% (Negative Self-esteem).

A study in 2003 involving 45 practitioners from the Aquitaine Sentinelle Network, researched the prevalence of depressive disorders among children and adolescents aged 7 to 17 years attending primary care outpatient clinics. Of the 155 participants, 21 (13%) had symptoms at screening. A two-stage process was used before arriving at a formal diagnosis. The final numbers indicated that more than 1 in 10 of those aged 7 to 12 years and 5% of those aged 13 to 17 years were diagnosed with depression. Therefore, a proportion of the paediatric outpatients did exhibit depressive symptoms despite being apparently well.

Our study involved screening for depressive symptoms among siblings. The percentage with depressive symptoms (27%) was more than the former study (13%). A possible reason for this is regional differences in epidemiology, as the former study was conducted in France and our study involved the local Malaysian population. Another possibility is the difference in the sample population. This study involved siblings of paediatric outpatients and not the outpatients themselves. Its relevance is due to the paucity of data on the siblings of paediatric outpatients.
Prevalence of Depressive Symptoms by Gender and Age group

By age group, the prevalence of high depressive symptoms among the 13-17 year olds and the 7-12 year olds were: 31.2% and 23.6%, respectively. However, there was no statistically significant difference between the scores for the two age groups. When considering age and gender, there were no significant differences in scores between the groups either.

Adlina S, et al.8, studied the prevalence of depressive symptoms among 2048 secondary school students in the west coast state of Selangor, Malaysia using the Children’s Depression Inventory (CDI). They found that 10.3% of the students had high scores for depressive symptoms. This was lower than the 27% found in our study. A possible reason for the higher prevalence in our study subjects is the participants in our study were siblings of children who presented to the outpatient clinics of a hospital, whereas the study by Adlina S, et al.8 involved a different patient population (school students). Although the populations studied vary, it is interesting to note that both studies showed a high prevalence of depressive symptoms among well subjects in Malaysia.

Research into the prevalence of depressive symptoms as well as the risk factors among 9863 American adolescents was conducted by Saluja G, et al.9. The study was conducted among school students aged 11 years, 13 years and 15 years (grades 6, 8 and 10) via a self-administered questionnaire. Eighteen percent of the study subjects had depressive symptoms. This proportion is similar to our study. Girls (25%) were more affected than boys (10%) and for both genders, the prevalence of depressive symptoms increased with age. There were no significant gender or age differences for our study population.

Factors Associated with Depressive Symptoms

The only factor that significantly affected depressive symptoms was death of a first degree relative within the past year (Chi-square = 4.937, df = 1, p-value < 0.05). Of the subjects with low depressive scores, the majority (63 out of 73, 86.3%) did not suffer the loss of a first degree relative.

Our study highlights the importance of death in the family as a factor affecting the presence of depressive symptomatology. Other studies have shown that the death of a family member has an especially negative impact on the psychological well-being of the individual10-11.

This is consistent with the findings of a study by Melhem NM, et al.10. In that study, 182 children and adolescents aged 7 to 18 years, who had suffered the sudden loss of a parent, were studied from the time of parental death till 3 years later. Prolonged grief was associated with an increased risk of incident depression during the study period. Almost one third (31%) of the participants had increased grief reactions 9 months after the loss of a parent and had associated increased risk of depression.

Brent D, et al.11 had similar findings when they studied one hundred and seventy six subjects aged 7 to 25 years, who lost a parent due to suicide, accident or sudden natural death. They were studied at 9 months and 21 months after the death and compared to matched controls. The subjects who lost a parent were more likely at 9 months post-event to have depression. Also, at 21 months, the same group were more likely to have depression (and alcohol or substance abuse).
Death in the family can have longlasting effects on mental health and has a bearing on the development of depressive symptoms. Therefore, it is no wonder that death of a first degree relative emerged as a significant factor in our study. Research by Adlina S, et al., found that those with more depressive symptoms were likely to be girls, to have more more siblings and to have parents with no formal education or only primary school education. These factors were analysed in our study, but none of them were statistically significant.

A study conducted by Pochard F, et al. indicated that the prevalence of anxiety symptoms and depressive symptomatology among family members of intensive care patients were 69.1% and 35.4% respectively. This high level of symptoms was due to the presence of a relative with an illness. In our study, an ill relative was not found to significantly affect the scores.

Conclusion

A significant proportion of well siblings (27%) had high CDI scores. Therefore, even though depressive symptoms in children are difficult to detect, this does not equate to the total absence of depressive symptoms in this population. The negative impact of the death of a first degree relative on depressive scores was consistent with several other studies which cited death of a family member as a major factor. It is vital to recognise the existence of depressive symptoms among apparently well children, as they may require early intervention.

Recommendations

Insight into the mental health of children is crucial in order to ensure that those with depressive symptoms are identified at an early stage. This will enable better long term outcomes. Areas for further research are: depressive symptoms among paediatric patients with chronic illnesses and depressive symptoms among the siblings, parents and caregivers of these patients.

Acknowledgements

The authors would like to thank Prof. Dr. Mohd. Jamil, Consultant Psychiatrist, Psychiatry Department of University Science Malaysia, for permitting the utilization of the Malay version of the Children’s Depression Inventory (CDI) validated by his team of researchers. We would also like to thank Assoc. Prof. Karuthan Chinna of the Epidemiology and Biostatistics Unit, Department of Social and Preventive Medicine, University of Malaya for his invaluable statistical input.

Declaration of Conflicting Interests

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References


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**Email:** subhashinij@um.edu.my
Serotonin Transporter Gene Polymorphism is Associated with Antidepressant Response to Escitalopram in Multiethnic Malaysians with Major Depressive Disorder: A Preliminary Study

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2Pharmacogenomics Laboratory, Department of Pharmacology, Faculty of Medicine, University of Malaya, 50603 Kuala Lumpur, Malaysia

Abstract

Objective: This study investigates the relationship between antidepressant response to escitalopram and polymorphism of the serotonin transporter gene promoter region (5-HTTLPR) in multi ethnic Malaysian patients with Major Depressive Disorder. Methods: An eight weeks prospective study of treatment response to escitalopram was conducted on 29 Malaysian patients with Major Depressive Disorder. The severity and improvement of depression were assessed with the Montgomery-Asberg Depression Rating Scale. Patients were also genotyped for long (L) and short (S) polymorphisms in 5-HTTLPR using polymerase chain reaction. Results: Response to escitalopram treatment was more frequent in patients with 5-HTTLPR SS genotype than in those with LL or LS genotypes (p = 0.04, OR = 10.0, 95% CI = 1.05-95.2). The favourable allelic variant for response was S allele (p <0.01, OR = 4.73, CI = 2.60-8.59). However, there was no difference in the adverse effects rates between the 5-HTTLPR genotype groups (p = 0.39, OR = 2.44, 95% CI = 0.41-14.75). Conclusion: Polymorphism of 5-HTTLPR was associated with antidepressant response to escitalopram treatment but not to its adverse effects in the Malaysian depressed patients.

Keywords: Serotonin Transporter Gene, Polymorphism, Psychopharmacogenetics, Pharmacogenetics

Introduction

Unipolar Major Depression could become the second leading factor in the disease burden by 20201. Pharmacologic treatment of mood disorders has reduced morbidity of depressive disorder and improved mental health for millions of individuals worldwide.

Since the early 1950s antidepressant drugs have shown to improve well-being and increase the chance of good long term outcome. Unfortunately 30–40% of all patients do not respond sufficiently to the initial treatment and it takes up to 6 weeks for them to be identified2. Efficient clinical predictors have not yet been established, but
there is some evidence suggesting that genetic factors play a substantial role in response to antidepressants\textsuperscript{3-5}. The brain serotonin transporter (5-HTT) is the principal site of action of many antidepressants and its role is to re-uptake serotonin (5-HT) into the pre-synaptic neuron, which thus terminates the synaptic actions and recycles it into the neurotransmitter pool. A single gene encoding the human 5-HTT was identified and cloned, localized to chromosome 17q11.1–q12\textsuperscript{6}. The gene spans 31 kb and consists of 14 exons\textsuperscript{7}. Heils \textit{et al} (1996) reported a polymorphism in the transcriptional control region upstream of the 5-HTT coding sequence\textsuperscript{8}. It consists of a 43-bp insertion [long (L) allele] or deletion [short (S) allele] involving repeat elements 6 to 8. Lesch called it Serotonin Transporter-Linked Polymorphic Region (5-HTTLPR) and a study on lymphoblastoid cell lines found that the basal activity of the L variant was more than twice that of the S allele of the 5-HTT gene promoter\textsuperscript{7}. The "long/short" polymorphism in 5-HTTLPR has been proposed as a pharmacogenetic marker for antidepressant efficacy.

Even if some studies including Asian patients are discordant\textsuperscript{9-11}, many research groups have shown that homozygotes for the L variant have a better response to different SSRIs when compared to heterozygotes and homozygotes for the S variant\textsuperscript{12-20}. Some authors however, did not find such association\textsuperscript{21}.

Genetic differences among patients may contribute to differences in medication response and the severity of adverse effects. The profile of adverse events classically associated with SSRIs such as gastrointestinal disturbances, sexual dysfunction, headache and anxiety is linked directly to stimulation of several kinds of serotonin receptors\textsuperscript{22}. These treatment-emergent adverse effects may lead to early discontinuation rate as high as 30\%\textsuperscript{23}. The ability to identify patients at greater risk for particular adverse effects would allow clinicians to anticipate and perhaps add prophylaxes against these effects\textsuperscript{24}. In a study of 37 patients with depression who were receiving fluoxetine, those homozygous for the S allele of 5-HTTLPR showed a higher frequency of agitation and insomnia after treatment\textsuperscript{25}. Another study with Japanese patients found no association between the 5-HTTLPR polymorphism and fluvoxamine-induced nausea\textsuperscript{26}.

The Malaysian population is unique with three main ethnic groups consisting of Malay, Chinese and Indian. Pharmacogenomics study of treatment response to antidepressant has not been previously carried out in Malaysia. Hence this preliminary study was designed to determine whether antidepressant response to SSRI is associated with genetic polymorphisms of the 5-HTTLPR in the local population. The primary hypothesis of the study is that significant association exist between antidepressant response to escitalopram and genetic polymorphisms of 5-HTTLPR in Malaysian patients with major depression and that the 5-HTTLPR polymorphism is associated with adverse effects of escitalopram.

**Methods**

A prospective eight weeks study on unrelated depressed patients was conducted at the University Malaya Medical Center (UMMC). Sample size was determined based on the L and S allelic frequency of 5-HTTLPR polymorphism in Japanese and Korean populations as there was no such data of the local population. We presumed
that allelic frequency in our population will be closer to the Japanese and Korean populations rather than to the Caucasian population. The allele frequency of the 5-HTTLPR L variant is about 25% in Japanese and Korean populations. Based on the L and S allelic frequencies of 25 and 75 percents respectively, we need at least 36 patients to give 80% power to detect any significant association at the significance level of 5%. Patients were of 18 years old and above and the diagnosis was confirmed using Mini International Neuropsychiatric Interview (M.I.N.I.) based on the diagnostic criteria for Major Depressive Episode in Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (DSM-IV-TR). Patients were excluded from the study if they were pregnant, having psychotic features, suicidal, having other concomitant Axis I psychiatric disorders, having other significant medical conditions, such as seizures, head trauma with loss of consciousness or other neurological illness, or having alcohol or drug dependence. All patients were treated with escitalopram for eight weeks. Dosage for individual patient was titrated into the usual clinical range based on initial tolerability and clinical response. The antidepressant response was assessed at 2nd, 4th, 6th and 8th week using Montgomery-Asberg Depression Rating Scale (MADRS). Responders were defined as patients with at least a 50% reduction in MADRS total scores. Benzodiazepine was not allowed during the study period as it may influence the outcome of the study. Adverse effects that were both enquired by the investigator and reported by the patients were documented. The compliance to treatment was determined by pill counting and verification from the relatives. Blood of each patient was sampled during first visit for genotyping. Ethical approval was obtained from the UMMC Medical Ethics Committee. The confidentiality of the participants was assured and the purpose of the study was explained to the participants. Written informed consent was obtained from all the participants.

**Genotyping**

Genomic DNA was extracted from the whole blood using QIAamp® DNA Blood Mini Kit (Qiagen GmbH, Hilden, Germany). Patients were genotyped for 5-HTTLPR promoter region L/S variations. The insertion/deletion of the 5-HTTLPR polymorphism was amplified with forward primers 5’ GGC GTT GCC GCT CTG AAT GC 3’ and the reverse primer 5’ GAG GGA CTG AGC TGG ACA ACC AC 3’7. The PCR reaction was carried out in a total volume of 15 µl containing 1.5 mM magnesium chloride, 1 X buffer, 5% of dimethylsulfoxide (DMSO), 200 mM of dATP, dTTP and dCTP each, 100 mM of dGTP and 7’-deaza-dGTP, 0.4 µM of each primer, 0.4 U of Taq polymerase and 50-100 ng of template DNA. Thermal cycling was carried out at 94 °C for 5 minutes (denaturation), followed by 35 cycles at 94 °C for 30 seconds, 69 °C for 30 seconds in series, and 72 °C for 1 minute before a final extension step at 72 °C for 10 min. The PCR products were visualized using 2.5% agarose gel electrophoresis containing ethidium bromide (EtBr) or GelRed™, the latter being used in the later part of our study in the pre-cast agarose gel instead of the EtBr, due to its non-mutagenic and non-cytotoxic features. The gel was then visualized using 3Door MultiDoc-It Imaging Systems. Genotyping was performed blind to the clinical course of illness at the Pharmacogenomics Laboratory of the Department of Pharmacology.
**Statistical Analysis**

Means and standard deviations, ranges of continuous variables, and proportions of categorical variables are presented as descriptive statistics. The genotypes of 5-HTTLPR were classified into two groups: carriers of the L allele (LL and LS genotypes) and carriers of the SS genotype, the L allele having been reported to have a higher 5-HTT density and activity than the S allele\(^7,8\).

Data were analyzed based on two groups: LL/LS and SS, on account of the recessive nature of the S allele and the small sample size. Nonparametric statistics were used because of the small sample size. Categorical variables were compared by means of \(\chi^2\) tests. Continuous variables were compared by means of Mann–Whitney and Kruskall–Wallis tests when appropriate. Hardy–Weinberg equilibrium was tested by the \(\chi^2\) test. Results were considered significant at \(p<0.05\). All statistical analyses were performed using PASW Statistics version 18.

**Results**

A total of 29 patients were enrolled into the study which comprised of 20 females and 9 males. The patient characteristics are shown in Table 1, together with a tabulation of the LL/LS and SS genotype groups. The female to male ratio of 2:1 in our sample is consistent with previous epidemiological studies\(^3\). The ethnic distributions of Malays 41.4%, Chinese 37.9% and Indian 20.7% differ from other parts of Malaysia where Malays comprises 65% of the population followed by Chinese 26% and Indian 8%\(^3\). This is probably due to the site of the study which was in Kuala Lumpur which is a Chinese predominant area. However, depression affects all ethnic groups equally and this ethnic variation in our sample would not affect the generalization of our results to the Malaysian population. There was no statistically significant difference in the socio-demographic characteristics and baseline severity of MADRS scores between the 5-HTTLPR SS group LL/LS group.

**Table 1.** Socio-demographic characteristics and baseline MADRS scores for the various genotype groups

<table>
<thead>
<tr>
<th></th>
<th>5-HTTLPR SS (n=10)</th>
<th>5-HTTLPR LL/LS (n=19)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, years (SD)</td>
<td>40.9 (13.9)</td>
<td>39.9 (14.2)</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Female</td>
<td>7</td>
<td>13</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Malay</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>Chinese</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>Indian</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td>Married</td>
<td>8</td>
<td>11</td>
</tr>
<tr>
<td>Widow</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary</td>
<td>2</td>
<td>6</td>
</tr>
</tbody>
</table>
With regard to the 5-HTTLPR genotypes, 7 out of 29 patients (24.1%) were carriers of the LL genotype, 12 (41.4%) were carriers of the heterozygous (LS genotype) and 10 (34.5%) were carriers of the SS genotype. No significant deviation from the Hardy–Weinberg equilibrium was detected \((p = 0.44)\). The frequency of \(L\) and \(S\) allele was 44.8% and 55.2% respectively (Table 2). The \(L\) allele frequency was lower than that of the Caucasian population (57%) \(^7\), but is similar to that observed in some Asian populations \(^9,^{27}\). The genotype distribution did not differ significantly between Malay and Chinese \((\chi^2 = 3.89; p = 0.14)\). However, the Indian ethnic group differs significantly from Malay and Chinese \((\chi^2 = 7.48; p = 0.02)\) by having LL genotype as the predominant group, which is more similar to the Caucasian population.

Table 2. Genotype and Allele Distributions of Serotonin Transporter Gene Polymorphism among 3 ethnic groups

<table>
<thead>
<tr>
<th>5-HTTLPR Polymorphism</th>
<th>Malay</th>
<th>Chinese</th>
<th>Indian</th>
</tr>
</thead>
<tbody>
<tr>
<td>SS</td>
<td>5 (41.7)</td>
<td>4 (36.4)</td>
<td>1 (16.7)</td>
</tr>
<tr>
<td>LS</td>
<td>4 (33.3)</td>
<td>7 (63.6)</td>
<td>1 (16.7)</td>
</tr>
<tr>
<td>LL</td>
<td>3 (25.0)</td>
<td>0 (0)</td>
<td>4 (66.6)</td>
</tr>
<tr>
<td>S</td>
<td>58%</td>
<td>68%</td>
<td>25%</td>
</tr>
<tr>
<td>L</td>
<td>42%</td>
<td>32%</td>
<td>75%</td>
</tr>
</tbody>
</table>

More patients with the SS genotype responded to escitalopram treatment (90%), compared to patients with the LS and LL genotype (58.3% and 28.6% respectively). The \(S\) allele showed a higher response rate to escitalopram compared to the \(L\) allele (Table 3). The MADRS mean scores started showing statistically significant difference between the 2 genotype groups from 2\(^{nd}\) week onwards till 8\(^{th}\) week of study (Figure 1). There was no significant difference between the genotype groups in term of adverse effects rates.
Table 3. Genotype and Allele Distributions of Serotonin Transporter Gene Polymorphism in Responders and Non-responders to escitalopram

<table>
<thead>
<tr>
<th>5-HTTLPR</th>
<th>Responders n(%)</th>
<th>Non-responders n(%)</th>
<th>OR (95% CI)</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>SS</td>
<td>9 (50.0)</td>
<td>1 (9.0)</td>
<td>10.0 (1.05-95.2)</td>
<td>0.04*</td>
</tr>
<tr>
<td>LS</td>
<td>7 (38.9)</td>
<td>5 (45.5)</td>
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<td>2 (11.1)</td>
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<tr>
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<td>0.32</td>
<td>4.73 (2.60-8.59)</td>
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<tr>
<td>L</td>
<td>0.31</td>
<td>0.68</td>
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5-HTTLPR, serotonin-transporter-linked polymorphic region
*Statistical analysis was performed between SS and LS/LL.

Discussion

The results from our preliminary study showed that there is an association between the 5-HTTLPR polymorphism and antidepressant response to escitalopram in our mixed ethnic sample and that the favourable allelic variant for response was the S variant. Thus, our primary hypothesis was confirmed. The results are in line with studies done on other Asian populations\(^9,10,33\) but differ from that of the...
Caucasian populations in which the L variant showed better response to antidepressant treatment with SSRIs\textsuperscript{12,13,15,16,34}. The reason for this ethnic difference remains unclear. However, there are some possible explanations as discussed below.

**Ethnic differences in 5-HTTLPR allele**
Functional influence of the 5-HTTLPR polymorphism is related to the transcription of the gene. The L and S variants of the promoter polymorphism have functional differences in modulating transcription of the 5-HTT gene as well as subsequent 5-HTT availability\textsuperscript{8}. The L variant of 5-HTTLPR is associated with more than twice that of the S variant in the transcriptional activity and serotonin uptake\textsuperscript{8}. These allele-specific functional differences have been confirmed in human tissues including the brain\textsuperscript{7,35}.

In our study, the overall L allele frequency is 45% (Table 2), which is lower than that of Caucasian populations. The L allele frequency is about 57% in Caucasian populations\textsuperscript{7} but only about 25% in the Japanese and Korean populations\textsuperscript{9,10,27,28}. If we assume that the L variant of 5-HTTLPR is the favourable allele for response to SSRIs based on studies on Caucasian patients and also the studies done by Heils et al (1996) and Lesch et al (1996), we might expect a low response rate in our patients because of lower L allele frequency in our population. However the overall response rate was 62.1% in our study. Also, several other clinical trials have shown a consistent finding that 60-70% of depressed patients respond to SSRIs regardless of ethnic groups\textsuperscript{35-38}. Therefore, other genetic explanations involving other genes should be sought.

**Effects of other genetic polymorphisms**
The mechanisms by which antidepressant agents exert their clinical effects are not yet fully understood, and studies that focus on single candidate genes may not identify novel genetic information of clinical importance. Up to now, pharmacogenomics studies have focused on candidate genes implicated in the mechanisms of antidepressant drug action or in the pharmacokinetics of such drugs. It may not be possible to explain the different antidepressant response by analyzing only one polymorphism. There are several other genes which may also affect antidepressant response. For example, a second polymorphism in the 5-HTT gene occurring in intron 2 (STin2) is also linked to the 5-HTT gene expression and antidepressant response\textsuperscript{33}. In their study, both 5-HTTLPR and STin2 variant alleles were shown to contribute to the efficacy of SSRI.

Another possible explanation could be the presence of a new single nucleotide polymorphism (SNP) and one such SNP is the (A>G) in the sixth repeat of the 5-HTTLPR\textsuperscript{39}. Hu reported that a SNP (rs25531, A/G) in the L variant of 5-HTTLPR may have functional significance: The more common L\textsubscript{A} allele is associated with higher basal activity, whereas the less common L\textsubscript{G} allele has transcriptional activity similar to the S allele. These investigators suggest that in tests of association the L\textsubscript{G} alleles should be analyzed along with the S alleles.

Different ethnic populations may have other functional polymorphisms which may also affect the antidepressant response to SSRIs. A variation in the ATP-binding cassette B1 gene (ABCB1) coding for a P glycoprotein that determines brain tissue penetration of
many antidepressant drugs may predict clinical outcome in patients treated with substrates of this blood brain barrier regulation molecule\textsuperscript{40}. Several studies reported that variants of a gene coding for FKBP5\textsuperscript{41-43}, a co-chaperone involved in stress hormone signaling, and variants for serotonin receptor 5-HT\textsubscript{2A}\textsuperscript{44} are predictive of treatment response. Further associations have been reported for the glutamatergic receptor gene GRIK4\textsuperscript{45}, the enzymatic gene phosphodiesterase 11A (PDE11A)\textsuperscript{46}, inflammation-related genes (CD3E, PRKCH, PSMD9, and STAT3)\textsuperscript{47}, and urocortin-3 gene (UCN3)\textsuperscript{47} expressing a ligand of the corticotropin-releasing factor receptor (CRF2). Newer approaches that include whole gene sequencing or entire single nucleotide polymorphism (SNP) analyses are needed to identify other responsible functional loci. Polymorphisms of cytochrome P450 enzymes responsible for the metabolism of the SSRIs may also affect clinical response. Furthermore, treatment response is not only determined by genetic makeup but also by clinical features such as course of illness, comorbid anxiety, age at disease onset, current age, and sex\textsuperscript{48-50}.

**Adverse effects and 5-HTTLPR polymorphism**

Our preliminary study did not find significant association between adverse effect of escitalopram and 5-HTTLPR polymorphism. However, small sample size could explain why there was no significant association. Furthermore, there were patients who defaulted and were not contactable to give their reason of default. The possibility of these patients experiencing adverse effects cannot be ruled out.

**Limitations and Recommendations**

This was a preliminary study with limitations. The study was under power because of the small sample size. There were several reasons why the sample size was small. Firstly, since the UMMC is a referral hospital for the district, many depressed patients who came to the UMMC Psychiatric Clinic were already on various antidepressants prescribed by the referring general practitioners and these patients were therefore excluded them from the study. Other reasons for the small sample size include patient refusal to participate, suicidal patients and patients with psychotic features. In view of the possible effect of ethnicity on antidepressant response, adequate subject numbers should be included to allow for sample stratification into the different ethnic groups in future studies.

The second limitation was the absence of a placebo control group. Without a placebo group to compare to, we were unable to determine whether the response to treatment is due to the escitalopram effect, or non-specific response, or a combination of both.

The lack of serum drug level monitoring to monitor patient’s compliance to treatment was another limitation. Even though we did pill counting it was not possible to determine whether patients were compliant or not to their medication. Failure to comply will affect the clinical response hence affecting the outcome of the study. For the next stage of the study, we plan to carry out drug level monitoring to check on patient compliance and to exclude the non-compliant from the study.

The monitoring for adverse effects is now being carried out in this on-going study. Patients may not have been able to remember all the adverse effects that they had experienced, especially if the adverse effects were transient. Therefore a
systematic assessment using rating scale is now being done.

In summary, our study showed that 5-HTTLPR polymorphism is associated with antidepressant response to escitalopram treatment in mixed ethnic depressed patients in Malaysia. Further research is needed to confirm this preliminary result.

Acknowledgements

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CASE REPORT

Insulinoma Aggravating or Masquerading as Late-Onset Schizophrenia?

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Abstract

A 76 year-old lady with late-onset schizophrenia was admitted with hypoglycaemia. She was later found to have a pancreatic tail insulinoma, confirmed biochemically and radiologically. She is treated medically with Diazoxide while awaiting laparoscopic enucleation of the pancreatic tumour. The question remains if neuroglycopenia aggravates co-existing schizophrenia or if insulinoma-induced neuroglycopenia had been misdiagnosed as schizophrenia.

Keywords: Elderly, Insulinoma, Schizophrenia, Hypoglycaemia

Introduction

Hypoglycaemia is a common medical emergency and is most commonly seen in patients with diabetes mellitus particularly those treated with insulin. In hospitalized patients, hypoglycaemia occurs in patients with major organ dysfunction, severe wasting and malignancies. After excluding factitious hypoglycaemia, insulinoma is the archetypal and commonest cause of hyperinsulinaemic hypoglycaemia in well adults without diabetes.1 I report an unusual case of insulinoma in an elderly lady diagnosed to have schizophrenia.

Case Report

A 76 year-old lady from a residential home, was brought in to the casualty unresponsive. Capillary glucose was 1.7 mmol/L and she was given a bolus of 50 ml Dextrose 50 % after which she became fully conscious and orientated. She has no history of diabetes mellitus and not on any regular oral medications. She has mature cataract in both eyes and is blind.

Fourteen months earlier she was referred to the psychiatric hospital for aggressive behaviour, visual hallucinations and paranoid delusions of 1 year’s duration. At that time, she was noted to have hypoglycaemia on 2 occasions (1.9 mmol/L and 2.3 mmol/L) which was not pursued further. She has a son who has schizophrenia and is being followed up in the same psychiatric hospital. A diagnosis of schizophrenia was made based on her history. No imaging of the brain was done. She was discharged on intramuscular Fluaxol 25 mg monthly and followed up by the psychiatric hospital’s acute home care team.
During this admission, she continued to have persistent hypoglycaemia with capillary glucose below 3 mmol/L despite infusion of Dextrose 10% and Dextrose 50%. She was also hypokalemic with potassium ranging from 2.4 to 2.9 mmol/L. She was mostly bed-bound and “stiff” from the extrapyramidal side effect of the antipsychotic. She was encouraged to take regular feeds with Ensure formula milk and snacks with chocolate malt drink.

In spite of extremely low plasma glucose of 1.3 mmol/L, her C-peptide level was inappropriately raised – 1.83 nmol/L (0.37-1.47). Other blood investigations: FreeT4 11.14 pmol/L (9-24), TSH 2.17 mIU/L, random serum cortisol 20.84 µg/dL, Na 138 mmol/L, creatinine 76 µmol/L. Liver function test was normal. Plasma sulphonylurea screen was negative.

CT brain done showed bilateral corona radiata infarct.

In view of the above blood results, CT scan of the pancreas (triple phase contrast) was done which showed a 1.5 cm tumour, with benign features, at the tail of the pancreas (Figures 1a, 1b). A diagnosis of insulinoma, confirmed biochemically and radiologically was made.

![Figure 1a](image1.png)

![Figure 1b](image2.png)
Axial (Figure 1a) and coronal (Figure 1b) images of pancreatic triple phase CT in the portal venous phase showing a sharply defined, intensely enhancing nodule (red arrows) measuring 1.5 cm, at the tail of pancreas which projects from the inferior margin of the pancreas.

(A=aorta, B=bowels, GB=gallbladder, IVC=inferior vena cava, P=pancreas, RK=right kidney, LK=left kidney, LRV=left renal vein, S=spleen, SV=splenic vein, TC=transverse colon)

Diazoxide 100 mg tds was started and IV dextrose stopped. She became hyperglycaemic, hence Diazoxide was decreased to 100 mg bd and then once daily. She was referred to the surgeon for laparoscopic enucleation of the pancreatic tumour. About two weeks after starting Diazoxide, her platelet count dropped to 27000/μL from 295000/μL. It was thought to be related to Diazoxide which was decreased further to 100 mg every alternate day with an improvement of platelet count. This dose however could not maintain her glucose level and therefore subcutaneous injections of Octreotide were added – 50 mcg od titrated gradually up to 100 mcg bd.

Although her blood glucose levels have normalized, she is still sometimes agitated but there was no observed aggressive behaviour, and no reported visual hallucinations or paranoid delusions. The psychiatry team continues to treat her with IM Fluanxol.

Discussion

Insulinoma is the commonest pancreatic endocrine tumour yet rare with an incidence of 1 to 4 per million people. The majority of the tumours in non-familial disease is small (90% < 2cm), solitary (90%) and benign (90%). The median age of presentation is 47 years old although it has also been rarely reported in the elderly. Patients present with neuroglycopenic symptoms such as unusual behaviours, confusion, personality changes and “funny turns” with recurrent falls. A delay in diagnosis of up to 34 years has been reported because of the non-specific nature of the symptoms. Up to 20 percent of patients were misdiagnosed with a neurologic or psychiatric disorder before the insulinoma was discovered. On the other hand, very-late-onset schizophrenia-like psychosis (onset after 60 years) is a recognized disease with an annual incidence that increases 11% with each 5-year increase in age.

Surgical removal is the treatment of choice as it is curative. In recent years, laparoscopic enucleation is performed particularly for small, solitary insulinoma localized preoperatively.

Medical treatment for insulinoma is required for those awaiting surgery, or those unfit for or refuse surgery. It is also indicated in cases of tumour non-localisation, metastatic disease and those who failed surgery. Diazoxide, given in divided doses up to 1200 mg/day, is the most commonly used and effective drug. It was reported that adverse events – the commonest being fluid retention and hirsutism - from the drug are usually mild and do not need cessation or dose adjustments. It is a specific ATP-dependent potassium [KATP] channel agonist in normal beta cells and works by blocking the sulphonylurea receptors on the beta cells, resulting in opening of the KATP channels, and thereby inhibiting insulin release.

Octreotide, a somatostatin analogue, is often used as a second line therapy. Its exact
mechanism on insulin, glucagon and growth hormone release, and prevention of hypoglycaemia is still unclear. It is given subcutaneously up to three times a day due to its short half life of 100 minutes. Although reported to be highly effective in controlling symptoms associated with other pancreatic endocrine tumours, efficacy is less predictable for patients with insulinoma.

**Conclusion**

This is a case of an elderly lady with a diagnosis of late-onset schizophrenia who was later found to have spontaneous hypoglycaemia due to a pancreatic tail insulinoma. The question remains if the neuroglycopenia aggravates co-existing schizophrenia or if insulinoma-induced neuroglycopenia had been misdiagnosed as schizophrenia. While awaiting surgery, she was treated with Diazoxide, the dosing of which was limited by thrombocytopenia, and subcutaneous Octreotide injections.

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CASE REPORT

Pregabalin Induced Remission of Charles Bonnet Syndrome

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Abstract

Charles Bonnet syndrome is a condition characterized by the presence of visual hallucinations in patients having visual impairment. We report a case of an 83 year old male who had developed significant visual loss due to corneal abscess and adherent leukoma in his right eye and congenital blindness in left eye. He had presented with seeing images of people, animals since 8 months and was referred to a psychiatrist. There was remission of his symptoms with improvement in vision after keratoplasty operation. But the hallucinations restarted when his vision deteriorated after graft rejection. He was aware that the hallucinations were not real but a part of his imagination. A detailed history revealed that apart from anxiety due to hallucinations he did not have any other psychopathology. He was started on pregabalin and his symptoms dramatically improved.

Keywords: Charles Bonnet Syndrome, Visual Hallucinations, Pregabalin

Introduction

Charles Bonnet syndrome (CBS) is a condition occurring in 11-15% of patients with visual impairment\(^1\) like age related macular degeneration\(^2\), cataract\(^3\), or no specific eye condition\(^4\). It can affect people of any age\(^5\) but is seen predominantly in the 70-85 age group\(^1\). The hallucinations are recognized as unreal and occur without associated psychiatric symptoms. Most cases go undetected. This is either because of lack of knowledge amongst the practitioners or fear among patients of being labeled mentally ill. However there is no substantial evidence regarding course, management and prognosis of this syndrome\(^4,6\). Reassurance and explanation that the visions are benign and do not signify mental illness, is the only way out\(^7\). We report a patient with CBS whose visual hallucinations stopped after starting him on pregabalin.

Case

An 83 year old male was referred to the psychiatrist by the ophthalmologist for recurring complaints of seeing images with associated fearfulness for 7 days. The patient’s history was such that he was visually blind in left eye since birth. At 73 years of age he started complaining of blurring of vision in the right eye and was diagnosed as having cataract. As it was the only functioning eye and there were no other symptoms, he was operated for the same. After cataract surgery patient was
completely fine for 10 years and had no difficulties in doing his activities of daily living. 8 months ago patient developed gradual deterioration in his right side vision and 3 months later, he started seeing images of people sitting around him, staring at him but not causing him any harm. He reported these people as unknown, being traditionally dressed, accompanying him wherever he went and also being at his bedside. He occasionally reported seeing animals like cows, cats, dogs etc. around him. This scared him and he could not sleep properly.

Due to these persistent images, sleep disturbances and deterioration in his right side vision, the patient was referred to an ophthalmologist. This time patient was diagnosed as having corneal abscess with adherent leucoma in the right cornea with his vision being hand movements close to the face. Penetrating keratoplasty was done and simultaneously all his visual hallucinations and fear related to same completely stopped, with 75% improvement in vision.

The patient was fine and able to carry out his activities for a period of 5 months after which his vision deteriorated due to graft rejection. Associated revascularization changes and complete opacity occurred and the patient’s vision again was just perception of hand movements close to face. He then developed a recurrence of the visual hallucinations and this time he was referred to the psychiatrist for the same.

A detailed history and mental status examination did not reveal any major psychopathology. He did not have delusions, hallucinations or any cognitive, intellectual or behavioral impairment. The patient was diagnosed as having Charles Bonnet Syndrome and started on tablet pregabalin 75mg at night. Within 10 days of starting medications, the patient reported complete improvement in symptoms and all his hallucinations stopped. The medication was given for 1 month and then it was stopped as the patient had recovered.

However on stopping the medication, symptoms recurred within 4 days though this time the frequency of hallucinations was intermittent and they were fleeting. The patient also did not express any fears regarding them. Hence he was only kept under observation with a regular follow up. But over 1 month the condition deteriorated and the patient expressed distress. So he was restarted on the same dose tablet of pregabalin and within 4 days a dramatic response to the same was seen. This time patient has been on followed-up for 2 months after restarting pregabalin with complete amelioration of the visual hallucinations. However there is no improvement in his right eye vision and patient is being looked after by his wife.

Discussion

Based on the symptoms of visual hallucinations, we diagnosed the patient as CBS. The hallucinations in CBS can be simple or complex. In simple type, patients visualize simple patterns, grids, lines or abstract designs depending on the background. In complex types animals, people, insects etc. can be seen. These occur as a release phenomenon due to de-afferentation of the visual association areas of the cerebral cortex, leading to a form of phantom vision.

Literature shows gabapentin to be effective in the management and resolution of the hallucinations. It modulates calcium influx and reduces the release of excitatory neurotransmitters, influencing GABAergic neurotransmission. As the author had a
previous experience of using pregabalin in the treatment of CBS, this patient was also started on same\textsuperscript{1}.

Pregabalin being related to gabapentin has similar mode of action. But how gabapentin ameliorates the visual hallucinations is not known. Various antiepileptics like carbamazepine, valproate have also been used, but with variable success. It has been proposed that carbamazepine may be effective because of its inhibitory action on the increased ventral extrastriate neuronal activity in patients with CBS that persists between the attacks of hallucinatory symptoms. Other drugs include risperidone, an antipsychotic, and diazepam, a benzodiazepine, which have also been used\textsuperscript{10}. Donepezil, a cholinesterase inhibitor, was found effective in a case of CBS who did not have any history of cognitive decline\textsuperscript{11}.

There is not much literature on the recurrence of the visual hallucinations except for a case reported where ondansetron, a serotonin antagonist was used for treatment of CBS and the symptoms recurred after stopping the drug\textsuperscript{10}. This was also seen in our patient where by stopping pregabalin symptoms recurred and giving the medication ameliorated the same. Not much information is available in literature with pregabalin. Non-pharmacological interventions like closing or opening the eyes, blinking, putting on a light, distraction, hitting the hallucination or shouting at the hallucination may also help reducing the length of the hallucinatory period\textsuperscript{10}.

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CASE REPORT

Role of Modified Assertive Community Treatment (ACT) In Maintaining Stability in Patients with Dual Diagnosis: A Case Report

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Abstract

This case report highlights the role of hospital-based modified assertive community treatment (ACT) in maintaining stability in a patient with dual diagnosis. We report a case of a middle-aged Indian gentleman who had schizophrenia with co-morbid alcohol abuse presented with multiple relapses, with recurrent suicidal attempts and criminal behaviour during his relapse episodes. After stabilisation of his most recent acute episode in hospital, the patient was followed-up by the community mental health team (CMHT). He was able to maintain in remission and stay free from alcohol, suicidality and criminal behaviour when provided ACT. The hospital-based modified ACT is proven to be effective in the management of this patient with co-morbidities and complications to sustain remission and prevent relapses.

Keywords: Assertive Community Treatment (ACT), Community Mental Health Team (CMHT), Dual Diagnosis

Introduction

Schizophrenia is the most severe mental illness that comes with complications like increased suicidality, unemployment, damage in relationships, impaired social functioning, substance misuse and crimes\(^1\). About half of patients with schizophrenia have co-morbid alcohol abuse\(^2\). Alcohol misuse was identified as one of the suicidal risk factors among this group of patients\(^3\). Extra care is needed for patients with dual diagnosis with multiple psychosocial complications in order to maintain them in remission state while continuing their journey to recovery. Having dual diagnosis was enlisted as one of the exclusion criteria for the hospital-based modified ACT in Malaysia at the initial stage of its implementation. It still remains an exclusion criterion now in some centres. This is so possibly due to the extra challenges posed by patients with dual diagnosis which may intimidate the CHMT members resulting in ineffective treatment and care. This paper highlights the efficacy of hospital-based modified ACT in managing a patient with dual diagnosis with serious illness complications.
Case Report

Mr. RP is a 46-year-old unemployed Indian gentleman who has been suffering from schizophrenia with co-morbid alcohol abuse for the last eight years. His first psychotic experiences started after his divorce. He had second and third person auditory hallucinations; derogatory and commanding in nature, associated with persecutory delusions, tactile hallucinations, and somatic passivity that a ghost has entered his body and harassing him sexually. The ghost would inflict uncomfortable heaty sensation on his private part when he refused to respond. He also had depressed mood and attempted suicide by hanging himself due to the distressing auditory hallucinations.

Mr. RP also had a history of abusing cannabis and alcoholic drinks since early adulthood. However, this did not cause any problem to him. He stopped taking cannabis well before the onset of the psychotic symptoms. However, his alcohol intake increased after he developed schizophrenia, particularly so during the acute episodes as a form of self-medication to temporarily ease him off the disturbing voices. Mr. RP, who was employed before with several odd jobs, became totally unemployed after the onset of illness.

Since his first episode, Mr. RP has had multiple relapses due to non-adherence to medications which was partly due to side effects of the medications. He typically presented with florid auditory hallucinations associated with similar symptoms described earlier which led to suicidal attempts. There was no proper supervision of his medications as he had poor family support. He was staying with his maternal aunt at home. All this while Mr. RP had been treated in another hospital, in Kuala Lumpur, where he did not receive ACT.

His first contact with us was two years ago when he was hospitalized for another suicide act; he ingested bleaching agent in response to the hallucinations. His medications were continued. He was on tablet Haloperidol 2.5mg in the morning and 10mg nocte, tablet Artane 2mg three times daily, tablet Stilnox 10mg at night when needed, injection Modecate 25mg monthly and injection Kemadrin 10mg monthly. The patient was referred to CMHT upon discharge to monitor his adherence to medications and deliver his depot injection.

He was well under the care of the CMHT until June 2012. The patient then decided to continue his follow-up at his former treating hospital due to financial reasons. Unfortunately, he was later admitted to the medical ward in September 2012 for yet another suicidal attempt by ingesting organophosphate; and again, in a state of relapse. He had defaulted his medications and follow-up for quite some time while not under our care. After being stabilized medically, he was discharged and continued his follow-up at his former hospital without being referred for ACT.

He relapsed again not long after that. As usual, he took alcohol in order to reduce the voices and to help him to sleep. This time, he went to the extent of stealing to support his alcohol intake and was caught by police and detained in prison for 5 months. His medications were not served during his entire stay in prison. He attempted suicide again soon after his release from the prison by overdosing with a few types of medications and attempted to jump from a height. After 2 weeks of hospitalisation, the patient was discharged and referred to the hospital’s CMHT for follow-up.

The patient was visited by the team once to twice weekly at the initial stage after his
discharge. It was noted that the patient tended to take more benzodiazepines than prescribed and alcoholic drinks to aid his sleep. His medications were adjusted to help him with the sleep problem, and psychoeducation was given on the importance of medication adherence. Both his depot injection and oral medications were delivered by the team. The team also prepared a medication chart with single packing medications pasted on a chart board and engaged his aunt to monitor and supervise his medication intake. During one of our home visits, he was noted to have extrapyramidal side effects. Therefore, his oral antipsychotic was switched to tablet Risperidone with close monitoring given by the team. His extrapyramidal side effects improved, and he had no signs of relapse. The team also assisted to facilitate him withdraw some amount of his EPF money, which he had planned earlier, to continue his living. He was helped in money management with his aunt’s support. Additionally, he was referred to a social work officer for further financial aid.

Mr. RP still has a long journey to travel towards recovery; however, the first milestone has been achieved by maintaining him free from acute episodes and the accompanying serious complications. The state of recovery will be much easier to achieve with continuous holistic management approach adopted by CMHT than the usual treatment. Patient was planned for social networking and other psychosocial interventions in order to improve his social skills; particularly in preparing him for future employment.

Discussion

This case illustrates the success of hospital-based modified ACT in maintaining stability in a person with schizophrenia with comorbid substance abuse with multiple relapses and serious complications of relapse. ACT in Malaysia typically treats a patient with single primary diagnosis. However, in real practise, we encounter a lot of patients with dual diagnosis who are much more vulnerable to relapses and serious complications, which all require extra attention and care. As illustrated in this case, patients with dual diagnosis and other related complications could benefit from the service. ACT in this patient had helped him in certain aspects of his daily routine and improved his treatment adherence, attitude towards and knowledge about illness. In fact, ACT can be seen as life saviour in this patient.

The Cochrane review on the ACT for people with severe mental disorders concluded that ACT is effective in maintaining contact in people with severe mental illness as ACT reduces in-patient care and improves outcome. ACT also is cost effective when applied to the targeted population correctly though it is arguably more expensive as compared to standard care. In conclusion, the delivery of ACT in Malaysia needs to be individually tailored to meet one’s needs. It is true that a more frequent home visits are required in managing this patient which arguably could translate into high cost. However, it is justified for this group of patients with complex needs to be given enough service appropriate to their level of difficulties.

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BRIEF COMMUNICATION

Major Self-Mutilation: Profile of Seven Cases

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Abstract

Background: Behaviours that involve damaging the body tissues without intending suicide are defined as self-mutilation. Self-mutilation is not a separate disorder but it is a symptom of other psychiatric conditions. Major self-mutilations such as self-amputations are rare in psychiatric practice and most patients are psychotic during such acts. Common types of major self-mutilation are damaging the digits, the eyes or the genitals. Case Data: We report four cases of penile self-amputation and three cases of digital self-amputation. Four cases were diagnosed as schizophrenia and three cases were diagnosed as cannabis induced psychosis. Results: Out of the seven self-mutilated cases, four were reported due to command hallucinations and in three cases delusions were responsible for self-mutilation. Conclusion: The motives and provoking situations behind the self-mutilating acts should be identified to prevent or at least lessen the risk of episodes.

Keywords: Self-mutilation, Self-amputation, Command Hallucinations, Schizophrenia, Cannabis induced Psychosis

Introduction

Self-mutilation has been defined as “the deliberate alteration or destruction of body tissue without conscious suicidal intent”, which distinguishes it from self-injury incurred during a cultural ritual (e.g. body piercing) or socially accepted body modification (e.g. tattooing). Favazza and Simeon had classified self-mutilation into two categories on the basis of severity and frequency: a) moderate or superficial type: low intensity, high frequency form seen in personality disorders and mental retardation; and b) severe or major type: low frequency, highly destructive form which occurs in the context of psychosis or acute intoxications. The low intensity high frequency forms were further classified into compulsive, impulsive and stereotypic types.

Self-injurious behaviour (SIB) in form of self-mutilation is reported with a variety of psychiatric conditions, like psychotic disorders, affective disorders, personality disorders (mainly borderline), substance abuse, anxiety disorders, and medical conditions such as Lesch-Nyhan Syndrome. At times person with no obvious psychiatric disorders injure themselves and some types of self-injuries (e.g. tattooing) are culturally sanctioned. Feldman distinguishes self-
mutilation from self injurious behaviour; according to him, self mutilation is intentionally damaging a part of own body apparently without a conscious intent to die, and SIB is an array of behaviours ranging from self-biting and hitting to pica occurring in psychiatric conditions.\textsuperscript{5}

Minor or mild form of self-mutilation is quite common, does not usually cause significant disability, and may even be part of recognized cultural practices. In contrast, major self-mutilation (MSM) is rare, usually occurs in association with serious mental illness and often results in permanent loss of an organ or its function.\textsuperscript{1} The major form of self mutilation is usually sporadic and non-repetitive, involving highly destructive forms which are not suicidal.\textsuperscript{6} The 3 main forms of MSM are ocular, genital, and limb mutilation.\textsuperscript{7} Among these patients the exotic examples of self-mutilation such as amputation of body part, self-enucleation, stabbing, auto-castration, and even auto-cannibalism and auto-surgery have been reported.\textsuperscript{8} Patients who have removed an eye or cut off a limb are almost always psychotic, as are three quarters of patients who severely injure their genitals.\textsuperscript{7} Major self mutilations are seen in psychotic conditions like schizophrenia, intoxicated states and severe depression.\textsuperscript{2,9} Self-injurious behaviour among psychotic patients often occurs in response to command hallucinations or delusions, which are frequently religious in nature.\textsuperscript{8} Common themes include punishment for guilt and sexual transgression.\textsuperscript{8}

**Case Histories**

**Case 1**

A 34-year-old Hindu, single unemployed male presented at surgical emergency with self amputation of penis at its base. After surgical closure of wound, he was referred to psychiatry department. History revealed presence of irrelevant talk, odd behaviours, hearing of unusual voices and fearfulness for 17 years. He was addicted to cannabis, smoking daily for 20 years. He was abusing 10-20 Spasmo-Proxyvon capsules per day for 10 years. He used to take nitrazepam tablets occasionally. Occasional use of alcohol and tobacco (Khaini) was also present. Mental status examination (MSE) showed circumstantiality, tangentiality, second and third person auditory hallucinations. Patient was born as one of the triplets, where other two expired within couple of days after delivery. Patient failed four times in tenth class before leaving school. Maternal uncle of patient was suffering from psychiatric illness suggestive of psychosis.

Patient was diagnosed as cannabis induced psychosis with substance abuse and insight was grade I.

Command hallucinations were telling him to cut his penis was responsible for self mutilation. He amputated his penis to get rid of derogatory remarks made by the hallucinatory voices. (See Figure 1)
Case 2
A 26 years Christian, single unemployed male reported to psychiatric OPD with complaints of wandering tendency, odd behaviour, self laughing, aggressive and violent behaviour off and on for 5 years. Patient was educated up to BA. He was smoking cannabis daily for ten years. He was also addicted to alcohol and tobacco which he takes daily for about seven years. It was also brought to notice that he had tried to amputate his own penis few months back. On local examination, partially healed scar at shaft of penis was seen. Circumstantiality and disorganised thoughts was present. Hallucinations were absent.

Patient was diagnosed as cannabis induced psychosis with substance abuse and insight was grade II.

When asked about self amputation, he told that he did so as he wanted to be a female. He told that he did not want to become female anymore but didn’t regret the act. Sudden delusional idea was responsible for self amputation. (See Figure 2)

Figure 1:
Self amputation of Penis at its base following command Hallucinations telling him to cut his penis.

Figure 2: Self amputation (partial) of Penis at its shaft.
Case 3
A 40-year-old Hindu, single unemployed male with irrelevant talks, odd behaviour, self muttering, hearing of unusual voices and decreased self care for 15 years was brought to psychiatry OPD and subsequently admitted in psychiatry ward. On examination, it was seen that left index finger was amputated at first Interphalangeal joint and stump was healed. Patient had amputated his own finger. MSE revealed delusions, disorganised thoughts; second and third person hallucinations. He was arts graduate. During adolescence period, patient had consumed cannabis. Patient’s father was under psychiatric medications.

Diagnosis was schizophrenia and insight was grade II.

Patient was hearing voice of “God” in the form of commands asking him to cut the finger. He was deluded because of voices and cut his own finger believing that good things will prevail in the society after his sacrifice. (See Figure 3)

Figure 3:
Self amputation of left index finger at first Interphalangeal joint

Case 4
A 34-year-old Hindu married, illiterate, rickshaw puller was brought to emergency room with profuse bleeding from amputated stump of penis, irrelevant talks and psychomotor agitation. After sedation and closure of the wound he was admitted in plastic surgery ward. There was history of suspiciousness, fearfulness, disturbed sleep and decreased self care for 8 years. Patient was abusing alcohol and cannabis infrequently for 15 years. Family history was positive for psychosis in his brother. MSE was positive for delusion of persecution, second and third person auditory hallucinations.

Patient was diagnosed as paranoid schizophrenia with co-morbid substance abuse and insight was grade I.

Command Hallucinations from male voice was telling him to cut his penis. He was very frustrated and tired of the commands, so he succumbed to the wishes of the hallucinations and cut the penis. He had thrown away the cut penis into bushes so as no one could find it and try to rejoin it.
Case 5
A-59-year-old Hindu unmarried female presented to private hospital with self amputation of right middle finger when she was not able to remove iron pipe put around her finger. Finger could not be saved as local area was gangrenous due to repeated trauma. Patient was subsequently referred to psychiatric department. Relatives gave history of irrelevant talks, odd behavior, self muttering, hallucinatory behavior, poor hygiene for 35 years. She was studied till 4th class but detailed pre-morbid history was not available. She was chewing tobacco (Khaini) for more than 20 yrs. Delusions, disorganized thoughts and hallucinations were present.

She was diagnosed as schizophrenia with insight grade I.

Patient believed “Iron Pipe” as “Ring” and used to insert Iron Pipe into her right middle finger repeatedly. Local tissue was traumatized, and one day, she chopped that middle finger when she could not remove her “Ring”.

Case 6
A-31-year-old Hindu, married male presented to surgical emergency with self amputation of left little finger at second interphalangeal joint. There was history of suspiciousness, fearfulness and hearing unusual voices for previous five years. Patient was alcohol dependant and used to drink two/three times in a week. Cannabis was abused occasionally. He was matriculate and a shop owner. He was married with one son but separated for last one year. He had jumped from the third floor of the building in previous year. Mother was suffering from depression and was on antidepressant medications. MSE was positive for auditory hallucinations and delusion of persecution.

Diagnosis was paranoid schizophrenia with co-morbid Substance abuse and insight was grade II.

Amputation of Left little finger, distal phalanx was because of command hallucination to chop the finger from patient’s expired uncle “Budhichandra”. Patient had jumped from the third floor after hearing the command from same voice before.

Case 7
A-37-year-old Christian, unmarried male presented to psychiatry outpatient department with self withdrawal, abnormal behavior, self muttering, wandering tendencies, and hearing unusual voices. His history revealed that patient had amputated his penis five months earlier to the visit. On local examination healed scar was noticed above the scrotum. Patient was undergone operation at private hospital, where urethra was reconstructed and meatus was created. He was not availed of psychiatric consultation. There was history of psychosis for previous eight years. Patient was alcohol dependant. Cannabis was abused almost daily at the beginning of the illness for four to five years. He was matriculate and unemployed. MSE was positive for auditory hallucinations and formal thought disorder.

Diagnosis was cannabis induced psychosis and insight was grade II.

Accordant to mother of the patient, who is significant caregiver, patient was deluded with religious beliefs and amputated the penis as part of religious ritual.

Discussion and Conclusion
All seven patients were chronically psychotic at the time of self mutilation acts. Duration of illness was ranging from five years to thirty-five years. Insight into illness
was poor (grade I or grade II) in all cases. Family history of psychiatric illness was present in four cases. All of them belong to the low socioeconomic class and are residing in North-Eastern Indian state of Manipur which has ethno-cultural diversity from other parts of India. Such major self-mutilations are also reported in other parts of India and world and are seen in different ethno-cultural populations.\cite{4,5,7,9}

Cannabis abuse (lifetime) was present in six out of seven cases, and all cases abused tobacco (in various forms). Four self-mutilations were reported due to command hallucinations and other three were due to delusions. None of the penile amputation was associated with mutilation of scrotum/testes. Past history of self-harm was present in only one patient who had jumped from the building.

It is not known when in the course of psychotic illness, severe self-mutilation is most likely to occur.\cite{10} History of self-harm is present in mild/moderate self-mutilation but severe self-mutilation occur as an isolated event.\cite{4} Third quarter of patients severely self-mutilate and injure their genitals, followed by eyes and fingers.\cite{10}

Majority of reported cases of self-mutilation are psychotic with command hallucinations and delusions as leading underlying psychopathologies.\cite{11} A recent study has found that command hallucinations are common (53%) amongst Asian patients with schizophrenia and that there is a high rate (62%) of acting upon them. The same study also found that a history of self-harm predicts compliance with command hallucinations.\cite{12} A study suggested that self-mutilation may be explained by interpersonal circumstances and specific delusions which develop over a period of a few weeks and may occur as the last event in a sequence, indicating that self-mutilation may not be an impulsive act but an end result of treatable psychotic thinking.\cite{13}

One of our patients was repeatedly putting her finger in an iron pipe without feeling much pain. Diminished pain sensation in schizophrenia has been described previously; it can be so extreme that the lack of pain delays the diagnosis and management of acute, serious conditions such as peritonitis and perforated bowels.\cite{14}

Non-suicidal self-injury as deliberate direct destruction of body tissue without conscious suicidal intent is a relatively common occurrence in forensic referrals. Distinguishing between them is very important and forensic practitioners must be trained for this purpose.\cite{15}

Though extremely rare, the patients with body integrity identity disorder (BIID) mutilate themselves; or ask surgeons for an amputation or for the transection of their spinal cord. Patients who desire the amputation of one or more healthy limbs or who desire a paralysis need to be addressed carefully.\cite{16}

Patients who are not initially forthcoming with the reason should be regarded as a psychosis until proved otherwise. Self-mutilation is common in chronic psychotic patients, thus, early diagnosis and treatment of psychosis may reduce such acts. Motives and provoking situations should be identified to prevent or lessen the risk of episodes. We emphasize the importance of a trans-disciplinary approach in treating self-mutilation in psychiatric patients. The interaction between the treatment teams affords improvement of the patient’s condition.
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BRIEF COMMUNICATION

Moving the Malaysia Tobacco Control Agenda Forward in Psychiatry

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Abstract

Introduction: Tobacco smoking kills and estimated six million lives annually worldwide of which include 10,000 Malaysian lives. Twenty three per cent of Malaysian adults smoke however, similar prevalence is not known among the mentally ill. Those with mental illness often have higher prevalence rates and greater disability due to smoking. This commentary aims to update the mental health community in Malaysia on the on-going efforts made locally to assist the national tobacco control agenda. Methods: A brief report of recent updates is provided for this article. Results and Conclusion: Three major significant activities are reported, all of which will move the tobacco control agenda within psychiatry forward. These activities will allow psychiatry be in a better position to align tobacco control activities for the mentally ill together with the general population.

Keywords: Tobacco, Smoking

Introduction

Both the World Health Organization (WHO) and the United Nations (UN) concerned with the tobacco epidemic, implemented the Framework Convention for Tobacco Control (FCTC) in 2003. A resolution on the dangers of non-communicable diseases was put forward in 2011, of which tobacco smoking is a significant risk factor.1,2 Despite the various actions taken to curb tobacco use, it is still the number one public health problem the world over and kills an estimated six million people each year and is predicted to increase to ten million as early as 2030,3 less than two decades from now.

Malaysia is not shielded from the dangers of tobacco smoking either. An estimated ten thousand lives are lost each year directly due to tobacco smoking, many more lives are harmed as a result of second and even third hand smoking.4 Tobacco smoking is a significant risk factor for cardiovascular diseases, respiratory ailments and various cancers.3 The former has been reported to be the nation’s number one killer in the 2011 National Morbidity Health Survey5 thus...
making the agenda to be eradicated or at the least, reducing tobacco use, even more urgent.

Although the 2011 Global Adult Tobacco Survey (GATS) reported current smoking prevalence in the general adult population to be 23% in Malaysia, there has been little information on the prevalence of smoking within those with mental illness. The prevalence of mental illness in Malaysia is reported to be 11%, with the majority suffering from depression and anxiety. Studies elsewhere had reported smoking prevalence in those with mental illness to be two to three times the general average. For the 1% with schizophrenia, the prevalence of smoking within this small population had been reported to be as high as 90%. Also of concern is that those with mental illness who smoke, often smoke more cigarettes, inhale deeper, are more addicted and have poorer success at quitting. Lasser, Boyd, Woolhandler, Himmelstein, McCormick & Bor reported 44% of all cigarettes sold in the US and a third in New Zealand were consumed by those with mental illness alone. In short, a large proportion of cigarettes were taken by a small minority of any population. Steinberg, Williams & Ziedonis in their analysis went further to report that for these often marginalised, lower socioeconomic members of society, a third of their limited income was used to fund this addiction.

Unfortunately, despite the information available, psychiatry is often slow to react. In fact, psychiatry has in the past been guilty of supporting tobacco use. Prochaska, Hall & Bero found that the tobacco industry had in the past both supplied tobacco and blocked efforts to enforce a smoke free policy within psychiatry units. Instead those with schizophrenia were encouraged to continue smoking. Psychiatry has also been slow to implement smoke-free policies within psychiatric establishments. The same situation is observed in Malaysia. It is still acceptable for certain mental health units to allow smoking within their grounds or units in spite of the obvious dangers that smoking poses to both the individual and those around them. The issue is, why the double standard? As the general population at large is being offered better protection against the dangers of cigarette smoke, patients with mental illness are not being provided with the same level of care.

Of late, there is an increased interest in assisting special populations to quit smoking, including the mentally ill. Developed nations with a long history of tobacco control activity have noted consistent decline in their smoking prevalence but have reached a plateau in their decline. Some researchers postulate this phenomenon as being the result of certain populations within society not being addressed with current tobacco control actions. These ‘underserved’ populations include lower socioeconomic groups, those with medical co-morbidities and the mentally ill. In Malaysia these same observations have not gone unnoticed although we are yet to be faced with a similar situation (i.e. plateauing decline). Recently the Nicotine Addiction Research & Collaborating Centre (NARCC) had urged colleagues in psychiatry within the region to further assist those seeking mental health services. Similar attempts have been made to introduce tobacco cessation activities. This commentary attempts to describe three recent efforts made in tobacco cessation to further build momentum to eradicate tobacco use within psychiatry in Malaysia.

The first, involved the inclusion of an introduction of tobacco control activities and research in Malaysia in the recent Collegium
Internationale Neuro-Psychopharmacologicum (CINP) Regional Congress on Addiction Medicine. This congress was widely attended by more than three hundred psychiatrists. The introduction of a session on tobacco control signalled a change in the local psychiatry’s direction in dealing with tobacco and a show of strong leadership on the matter by the local organizers, the Malaysian Psychiatric Association. During this same event, the director of Hospital Permai who is also the current president of the association informed delegates of their success in the implementation and enforcement of a smoke-free policy from admission to discharge of patients receiving service at their institution. Hospital Permai is a 1400 bedded mental institution, one of the largest in the country. The message was simple, if it could be done here, it should be able to be done elsewhere in the country.

The second was the inaugural symposium on tobacco control conducted by University Malaya Centre of Addiction Sciences co-hosted by the Department of Psychiatry & Mental Health, Queen Elizabeth Hospital (QEH) and, University Malaysia Sabah (UMS) in Sabah. This was a follow up from a conference on smoking cessation in 2012. Both introduced a number of sessions highlighting smoking and mental health. This was deemed important as previous unpublished review on psychiatry and tobacco use found that psychiatrists often reported the lack of confidence and knowledge as being amongst reasons for not wanting to treat smokers with psychiatric condition. Similarly, in the same review, better training was found to be helpful in increasing treatment to this same group. It is hoped that by introducing consistent and continuous scientific forums of tobacco use disorder among psychiatrists and other mental health providers, a shift to increase and encourage treatment for those with mental illness will be realised. This symposium with a record attendance of 84 participants included psychiatrists and mental health providers from a number of hospitals in Sabah including Kudat, Tawau and Kota Kinabalu, and also the mental institution (Hospital Mesra) within the capital of Sabah.

A third important effort made was in the publication of Tobacco Control News Bulletin by NARCC which was officially launched by the Deputy Minister of Health Malaysia at a national Smoke Free, a Healthier Mouth, Healthier You campaign in Kuala Lumpur. This quarterly four page bulletin, aimed at providing basic level tobacco control updates, targeted for all health care providers in Malaysia, was to assist them in keeping abreast with current events and knowledge within the local and international tobacco control community. The bulletin contained material relevant to medical, dental, pharmacy and nursing healthcare providers with one article in each publication specifically targeted on mental health. These bulletins will be distributed to all relevant stakeholders including all mental health services and mental institutions.

It is hoped that the above activities in Malaysia will brew well for the local scene in tobacco control particularly among the psychiatry discipline. With more tobacco control activities for psychiatry in the future, there is a huge opportunity for all working in the field to assist those with mental illness not only in their mental health but, also their physical health. By being active now, we will be in a better position to align tobacco control activities for the mentally ill together with the general population. This task is indeed a challenge but it holds much promise for the future.
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