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Supplement  
16th Malaysian Conference on Psychological Medicine  
22-23 July 2011: Abstracts for the Free Paper and Poster Presentation
Physically ill patients have three to four times more likely to develop mental illness than the general population. About half of hospital patients have diagnosable psychiatric disorders. The proportion is even higher if taking into account of those patients who have normal reaction like feeling depressed or anxious as a result of the physical illness. The co-morbidity may complicate the help seeking behaviour, diagnosis and treatment of the disease [1]. Conversely, mental disorders increase risk for communicable and non-communicable diseases. As a result, this will incur higher cost for the country to spend on health sector. Hence integrating mental health care into the management of physically ill patients is highly needed.

In United Kingdom, the present Coalition Government is aware of the social and economic consequences if mental health care is not taken seriously. They have agreed good mental health and resilience are fundamental to our physical health [2]. In this project, a set of shared objectives was outlined: (i) More people will have good mental health, (ii) More people with mental health problems will recover, (iii) More people with mental health problems will have good physical health, (iv) More people will have a positive experience of care and support, (v) Fewer people will suffer avoidable harm and (vi) Fewer people will experience stigma and discrimination.

It was emphasized on the improvement within the general hospital setting being ALERT to five priority areas [3]:

**Awareness of the link between physical and mental health needs to be heightened.**

**Liaison Psychiatry Services are required in all general hospitals**

**Engaging Patients & Carers is essential in improving services**

**Re-organisation, Commissioning & Quality Standards – Liaison mental health services should be commissioned and reviewed against agreed specific service standards**

**Training & Education needs to be improved for all healthcare professionals**

We have to look at our health policies in Malaysia. The mental health burden cannot be underestimated and the interactions between mental illness and physical diseases need to be heightened. On that note, there is no other word to argue but to agree that there is no health without mental health.

**References**

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Perceived Burden and Social Support of Caregivers in Early onset Psychosis & Epilepsy: A Comparative Study

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Abstract

Perceived burden and social support are two very important aspects related to care giving of the patients with psychological disorders, especially to patients who have chronic course of illness. Many studies were done on patients with severe as well as chronic mental disorders but not much works were done on adolescent populations with psychosis and common neurological disorder like epilepsy. We intended to study perceived burden and social support of the 60 caregivers of the adolescents with psychosis and epilepsy (30 each in psychosis and epilepsy patients). We have found that caregivers of the adolescents with psychosis have been experiencing higher level of burden of care in comparison to caregivers of the adolescents with epilepsy. We have also observed that caregivers of the adolescents with psychosis also tend to perceive less social support from their respective social networks than that of caregivers of the adolescents with epilepsy.

Keywords: Caregivers, Social Support, Burden, Psychosis

Introduction

Epilepsy and psychosis are two neuropsychiatric conditions that know no gender, geographic, social, or racial boundaries. These two disorders affect people of all ages, all countries and cultures. But having been exposed to these disorders at the adolescence could make an individual more susceptible to have more complicated form of illness and more compromised socio-occupational functions. Psychosis and epilepsy are two major neuropsychiatric disorders with a chronic course which makes it critical for caregivers to provide appropriate care which is often found to be a cumbersome task. Epilepsy happens to be the commonest neurological disorder in childhood and adolescence. The prevalence rate of epilepsy in children is approximately 0.5%. It is to be noted that nearly 50% of the cases of various forms of epilepsy occur before the age of 5 years, whereas 75% have their onset before the age of 20 years. Early onset schizophrenia is associated with high degree of impairment to patients and financial burden to families. Early onset schizophrenia is considered as more severe form of schizophrenia. Epidemiological study like Gillberg and Steffenburg study showed that prevalence of early onset schizophrenia (10 years of age or younger)
rates at 1.6 per 100,000 in western Sweden. Subsequently Remschmidt et al. observed that approximately one in 10,000 children tend to develop schizophrenia before 18 years of age. In case of bipolar disorder prevalence rate in children 5–18 years old is 4%, and of any mood disorders 27%.

To maintain the continuity and objective of the quality of care-giving for a long term it is really essential to take into account the social support and burden of illness for the patient and caregivers which indeed is a daunting task. Chronic ailments like early onset psychosis and epilepsy have a very antagonistic impact which is not only limited to the affected person but also cause significant anomalies to family system. Epilepsy to children often causes multiple stressors, adjustment related problems and disturbances in family relations. Severe psychotic disorder like schizophrenia and bipolar disorders at the early phase of life usually causes a great deal of impact on the growth and developmental process of children and adolescents. And such illnesses put caregivers into a troubled situation of handling pressure of caregiving to their ailing children as well as to keep their roles in family and domestic affairs intact. Almost same kind of picture could also be found in families with children and adolescents with epilepsy. Factors like pervasion of illness related pressure in to all family activities and functions, feeling of being fizzled out by the burden of care giving and feeling of stigma could often be proved to be limiting factors to the successful implementation of treatment and rehabilitation of these adolescents. These disorders inflict enormous physical, psychological, social, and economic burdens on individuals, families, and countries especially because of misunderstanding, fear, and stigma of epilepsy. Family caregivers also face multiple psychosocial and economic problems. Schizophrenia is a chronic mental disorder associated with health, social and financial burden for a long duration, affecting not only for patients but also for families, other caregivers, and the wider society. Caring for a family member who is having schizophrenia is an enduring stressor and causes considerable amount of burden.

This study would look into the matter related to social support and burden of care of the caregivers of the early onset patients with epilepsy and psychosis. Such kind of comparative study is very much handful in developing world so it will help the mental health clinicians to have more knowledge regarding this issue and the management of this disorder.

Methods

Design
This study was a cross-sectional and hospital based one and aimed to examine the difference in the social support and burden of care between the caregivers of the patients with early onset psychosis and epilepsy. This study was done at the “Centre for Child and Adolescence Psychiatry Department” and “Epilepsy Clinic” of the Central Institute of Psychiatry, which is a Government of India owned tertiary psychiatry and neurology treatment and research institute. The samples of the study were recruited through purposive sampling method. The two groups consist of adolescent patients with early onset psychosis and epilepsy. The diagnoses of these two groups were made by the consultant psychiatrists of the institute as per the standard diagnostic guidelines, e.g., ICD-10-DCR and International League Against Epilepsy (ILAE) criteria. Both the male and female adolescents who were within the age range of 13-17 years with these two diagnoses were selected in the
study. But the patients with co-morbidities like mental retardation, learning disorder, conduct disorder and ADHD were excluded from the study. In case of the caregivers only first degree relatives who stay with the patients at the same household at permanent basis and actively involved and responsible for the treatment and aftercare of the patients for ≥ 2 years for continuous basis. The minimum age of the caregivers taken in the study was 18 years and in both the groups caregivers were matched as per age, sex, education and family income. Caregivers who had been found to have major debilitating physical illnesses, substance addiction and who did not give the informed consent for participating in the study were excluded. In this study joint family was defined as: it is a family system where individuals from many generations live under the same roof and there is collectiveness in financial and other responsibilities in the family and jointness in taking responsibilities of the children.

Participants
The samples consisted of 30 each key relative of the adolescent patients with psychosis and epilepsy who were being diagnosed by the consultant psychiatrists as per the ICD-10-DCR and International League Against Epilepsy criteria. In the psychosis group adolescents patients with the diagnosis of either schizophrenia or Bipolar Affective Disorders (with psychotic symptoms) were selected for the study.

Procedure
Before recruiting the samples, they were briefed about the objectives of the study and written informed consent was taken from them. To collect the necessary data instruments like a specially designed socio-demographic data sheet, the Social Support Questionnaire and Family Burden Interview Schedule. Social Support Questionnaire (SSQ) is the Indian adaptation of the Social Support Scale of Pollack and Harris measures perceived social support. It has 18 items rated on a 4-point scale. Higher scores denote more support available. The Family Burden Interview Schedule was used in this study to measure the burden of the caregivers. This semi-structured interview schedule has 24 items rated on a 3-point scale and grouped into five areas, namely, financial burden, disruption of family routine, of family leisure, and of family interactions, effect on physical health of relatives and on mental health of relatives. A standard question to assess ‘subjective’ burden is also included. The scale has been used in several studies from India and other developing countries and in a number of different patient groups. Psychometric properties have been found to be satisfactory.

Statistical Analyses
Descriptive statistics (mean and standard deviation) were used to describe sample characteristics. Inferential statistics like the Chi-square and t-test and were used to compare the level of burden of care and social support of the caregivers of the two groups of adolescent patients. Correlation-coefficient was used to see the relationship between various socio-demographic variables and areas of burden of care and social support.

Results
As per the socio-demographic background of the adolescent patients and their caregivers with psychosis and epilepsy is concerned we found that in epilepsy group
most of the patients as well as their caregivers were from the joint family background \((n=24)\). Whereas in psychosis group, patients were equally from both joint and nuclear families. Significant difference was seen between these two groups in the variable, e.g., type of family (Table 1). The difference was there since in epilepsy group majority of patients and their caregivers were from joint families. In terms of religious background we found that most of the patients and their caregivers were to be Hindu by religious affiliation. Most of the patients in either group did not have the family history of mental and/or neurological illnesses like psychosis or epilepsy.

**Table 1.** Socio-demographic variables of patients of early onset psychosis and epilepsy

<table>
<thead>
<tr>
<th>S no.</th>
<th>Variables</th>
<th>GROUPS</th>
<th>(\chi^2)</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Psychosis (n-30)</td>
<td>Epilepsy (n-30)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Sex</td>
<td>Male</td>
<td>22</td>
<td>20</td>
<td>.190</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Female</td>
<td>8</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Family Income</td>
<td>&lt;5000</td>
<td>17</td>
<td>15</td>
<td>.120</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5001-10000</td>
<td>5</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>&gt;10001</td>
<td>8</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Religion</td>
<td>Hindu</td>
<td>20</td>
<td>20</td>
<td>.126</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Muslim</td>
<td>5</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Christian</td>
<td>5</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Type of family</td>
<td>Joint</td>
<td>15</td>
<td>24</td>
<td>.012</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Nuclear</td>
<td>15</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Extended</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Domicile</td>
<td>Rural</td>
<td>20</td>
<td>21</td>
<td>.146</td>
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<td></td>
<td></td>
<td>Urban</td>
<td>8</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Semi urban</td>
<td>2</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

*P<0.05

We found that parents happened to be the caregivers to the majority of the patients of both groups. Significant difference was noted between these two groups in terms of the marital status of the caregivers. In psychosis group 4 caregivers of the patients were reported to be either unmarried or widowed or divorced (Table 2a & 2b).

**Table 2a.** Socio-demographic variables of caregivers of early onset psychosis and epilepsy

<table>
<thead>
<tr>
<th>S no.</th>
<th>Variables</th>
<th>GROUPS</th>
<th>(\chi^2)</th>
<th>df</th>
<th>p</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Psychosis (n-30)</td>
<td>Epilepsy (n-30)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Sex</td>
<td>Male</td>
<td>23</td>
<td>24</td>
<td>.234</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Female</td>
<td>7</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Marital status of caregivers</td>
<td>Married</td>
<td>26</td>
<td>30</td>
<td>.056</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Unmarried</td>
<td>4</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Occupation</td>
<td>Employed</td>
<td>21</td>
<td>23</td>
<td>.195</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Unemployed</td>
<td>9</td>
<td>7</td>
<td></td>
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Parents 23 28 .060 1 .071

*P<0.05

Table 2b. Socio-demographic variables of caregivers of early onset psychosis and epilepsy

<table>
<thead>
<tr>
<th>Variables</th>
<th>GROUPS</th>
<th>t</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
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<td></td>
<td>Psychosis (n=30)</td>
<td>Epilepsy (n=30)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mean±SD</td>
<td>Mean±SD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>40.40±9.48</td>
<td>41.63±6.04</td>
<td>-.660</td>
<td>58</td>
</tr>
<tr>
<td>Education</td>
<td>11.03±6.72</td>
<td>12.73±5.55</td>
<td>-1.066</td>
<td>58</td>
</tr>
</tbody>
</table>

We found significant difference in the areas of Family Burden Interview Schedule i.e., ‘disruption of routine family activities’, ‘disruption of family leisure’, ‘disruption of family interaction’ and ‘effects on mental health of others’ between the caregivers of the adolescents with psychosis and epilepsy. We also found that caregivers of patient with psychosis group do perceive less social support as compare to caregiver of adolescents with epilepsy (Table 3).

Table 3. Comparison of social support & burden of caregivers of both groups

<table>
<thead>
<tr>
<th>Variable (Scores obtained in Social Support Questionnaire10 &amp; Family Burden Interview Schedule11)</th>
<th>GROUPS</th>
<th>t</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Psychosis (n=30)</td>
<td>Epilepsy (n=30)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mean ± SD</td>
<td>Mean ± SD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social support</td>
<td>22.23±2.20</td>
<td>30.63±6.41</td>
<td>-6.783</td>
<td>58</td>
</tr>
<tr>
<td>Financial burden</td>
<td>8.73±3.05</td>
<td>8.60±3.53</td>
<td>.156</td>
<td>58</td>
</tr>
<tr>
<td>Disruption of routine family activities</td>
<td>8.56±0.93</td>
<td>7.06±2.18</td>
<td>3.463</td>
<td>58</td>
</tr>
<tr>
<td>Disruption of family leisure</td>
<td>5.93±1.17</td>
<td>4.93±2.11</td>
<td>2.264</td>
<td>58</td>
</tr>
<tr>
<td>Disruption of family interaction</td>
<td>7.80±2.18</td>
<td>5.06±1.98</td>
<td>5.072</td>
<td>58</td>
</tr>
<tr>
<td>Effect on physical health of others</td>
<td>0.80±0.76</td>
<td>1.00±0.58</td>
<td>-1.140</td>
<td>58</td>
</tr>
<tr>
<td>Effect on mental health of others</td>
<td>3.20±0.61</td>
<td>1.60±0.56</td>
<td>10.553</td>
<td>58</td>
</tr>
<tr>
<td>Subjective burden on the family</td>
<td>1.73±0.44</td>
<td>1.66±0.47</td>
<td>0.555</td>
<td>58</td>
</tr>
</tbody>
</table>

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

In case of early onset psychosis we noticed that educational level of caregivers have significant bearing on the two domains of Family Burden Interview Schedule11, viz, financial and subjective burden. It signifies that higher the level of education to caregivers lower the level of burden in those areas. Significant negative correlation was seen between caregivers’ age and one domain of Family Burden Interview Schedule11, e.g. family interaction. It confers that deleterious impact of illness on family interaction would be low if caregivers are younger or vice versa. This study also showed that financial burden would likely to be low to patients with psychosis who have recently developed illness (i.e. duration of illness has significant negative correlation with financial burden) (Table 4).
In case of early onset epilepsy significant negative correlations were observed between age of onset and two domains of Family Burden Interview Schedule\textsuperscript{11} (financial and subjective burden). In this group significant positive correlation was seen between financial burden and age of the caregivers. It means as the age of the caregivers' increases the financial burden would also increase. Significant positive correlations were also noticed between educational level of caregivers and two domains of Family Burden Interview Schedule\textsuperscript{11}, i.e. routine family activities and family interactions. It meant that higher the educational level of caregivers higher the level of burden on two areas of family burden measuring scale, e.g. routine family activities and family interaction (Table 5).

### Table 4. Relationship of socio demographic variables between social support and family burden in early onset Psychosis

<table>
<thead>
<tr>
<th>Variables</th>
<th>Social support</th>
<th>Financial burden</th>
<th>Routine family activities</th>
<th>Family leisure</th>
<th>Family interaction</th>
<th>Physical health of others</th>
<th>Mental health of others</th>
<th>Subjective burden</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age of onset</td>
<td>-.003</td>
<td>.243</td>
<td>.093</td>
<td>-.038</td>
<td>.174</td>
<td>.275</td>
<td>-.028</td>
<td>-.155</td>
</tr>
<tr>
<td>Duration</td>
<td>.359</td>
<td>-.260*</td>
<td>.000</td>
<td>000</td>
<td>.109</td>
<td>-.260*</td>
<td>.130</td>
<td>.000</td>
</tr>
<tr>
<td>Age of caregivers</td>
<td>-.217</td>
<td>-.038</td>
<td>.207</td>
<td>-.280</td>
<td>-.475**</td>
<td>-.036</td>
<td>.129</td>
<td>.309</td>
</tr>
<tr>
<td>Education of caregivers</td>
<td>.190</td>
<td>-.391*</td>
<td>-.206</td>
<td>-.087</td>
<td>-.196</td>
<td>.116</td>
<td>-.027</td>
<td>-.498**</td>
</tr>
</tbody>
</table>

*P<0.05, **P<0.001

### Table 5. Relationship of socio demographic variables between social support and family burden in early onset Epilepsy

<table>
<thead>
<tr>
<th>Variables</th>
<th>Social support</th>
<th>Financial burden</th>
<th>Routine family activities</th>
<th>Family leisure</th>
<th>Family interaction</th>
<th>Physical health of others</th>
<th>Mental health of others</th>
<th>Subjective burden</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age of onset</td>
<td>-.034</td>
<td>-.501**</td>
<td>-.198</td>
<td>-.145</td>
<td>-.156</td>
<td>.000</td>
<td>.100</td>
<td>-.379*</td>
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<tr>
<td>Duration</td>
<td>.135</td>
<td>.046</td>
<td>-.058</td>
<td>-.195*</td>
<td>-.043</td>
<td>-.106</td>
<td>-.192*</td>
<td>-.274</td>
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<tr>
<td>Age of caregivers</td>
<td>.061</td>
<td>.694**</td>
<td>.164</td>
<td>.192</td>
<td>-.294</td>
<td>-.282</td>
<td>.067</td>
<td>.242</td>
</tr>
<tr>
<td>Education of caregivers</td>
<td>.102</td>
<td>.103</td>
<td>.547**</td>
<td>-.180</td>
<td>.433*</td>
<td>.274</td>
<td>.354</td>
<td>.056</td>
</tr>
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</table>

*P<0.05, **P<0.001
Discussion

The study was carried out on total 60 subjects [30 each caregivers of the adolescent patients with psychosis (schizophrenia and bipolar disorder) and epilepsy] who were being diagnosed by the consultant psychiatrists as per the ICD-10-DCR and ILAE criteria. Both the groups of caregivers were matched on various socio-demographic factors (age, sex, education and income of family). The purpose of the study was to assess the quality of life and burden of care of the caregivers of the adolescents with psychosis and epilepsy. In psychosis group only two disorders were included, i.e. schizophrenia and bipolar affective disorders with psychotic symptoms [BPAD ‘mania’ or ‘depression’ with psychotic symptoms].

In this study we have found that caregivers of adolescents with psychosis do perceive higher burden in many areas than that of caregivers of adolescents with epilepsy. Caregivers of adolescents with psychosis have the experience of being burdened in areas like ‘maintaining routine family activities’, ‘initiating leisure activities for family members’, ‘enactment of optimal interaction pattern within the family system’ and ‘having unwarranted negative impact on their mental health because of their child’s illness’. In literary or categorical sense the phrase “family or caregiver burden” means the effects of the mental illness of one family member on the emotional well-being of other family members, daily use of time of family members’, financial dispositions, and general living conditions.

Perception of burden of care on the part of caregivers, especially parents do have very significant longitudinal implication on the long term prognosis of these adolescents. Providing long term care to adolescents with chronic psychiatric and neurological illnesses could become a tantalizing thing to key relatives, since care-giving to these people requires highest degree of perseverance as well as ability to withstand continuous stress. So care-giving to these people has often been found to be source of agony to them. These caregivers have to face the manifold pains like seeing their children in distress and apprehending unfriendly attitude from others in the form of stigma. Due to those factors such families often face family turmoil in the forms of faulty family functions and under achievements in many quarters. In this study we have found caregivers of the adolescents with psychosis have higher level of burden in many areas of burden measuring tool we have used. Family members with chronic mental patients e.g. schizophrenia and bipolar disorder often reckon themselves to be in unfortunate condition which in turn leads to develop burden of care and negative emotions about their fate and daily responsibilities. Few factors like ‘having an uncertain course of the disease’, ‘severity of symptoms’, ‘length of time in hospitals for treatment’, ‘number of hospitalization’, ‘disturbing behavior of patients’, ‘loneliness’, ‘predominance of negative symptoms’, ‘lack of external support from other than core family members’, ‘lack of reciprocity in relationship with the patient’, ‘having a perpetual sense of grief due to loss of abilities and prospects of patients’, and ‘apprehension of unpredictable mood swings and violent behavior of patients’ have been identified as potential factors for generating burden of care in family members of chronic psychiatric patients.

Whereas in epilepsy, we observed that caregivers do feel lesser burden than caregivers of adolescents with psychosis (schizophrenia and bipolar disorder). It
might be due to few factors like increased awareness about neurological origin of epilepsy in people, feeling of lesser stigma among caregivers, presence of higher level of functionality of patients, and above all epileptic adolescents and their caregivers were selected from the dedicated ‘epilepsy clinic’ of the Central Institute of Psychiatry, where this study was carried out. This epilepsy clinic has been in operation since last decade and instrumental in dispensing therapeutic interventions as well as dispelling stigma and misconceptions about epilepsy in common people. And most of the adolescents with epilepsy were old cases who have been taking treatment from this clinic for years. Whereas in psychosis, many of the cases were ‘first timers’ in the institute and many caregivers did not have adequate information about psychoses (schizophrenia and bipolar disorder) and their treatment. Apart from that many adolescents with psychosis did have marked incapability in various aspects of life functions. We have also seen that caregivers of the adolescents with psychosis do receive significantly lesser support from their respective social network and this factor might have some influence in causing burden of care in them. In previously done studies on early onset psychosis key caregivers often have been observed to take huge responsibilities to fulfill all kinds of needs of patients, which cause significant burden to them and their menace becomes excruciating by other factors like ‘feeling of stigma and apprehension of being prejudiced by community’, ‘high degree of psychopathology’, ‘tempered socio-occupational functioning areas of patients due of illness’, etc. In present study rising of burden of care to psychosis group might as well be due to aforesaid factors.

In present study significant negative correlation was found between age of caregivers and impact of family interaction area of burden of care measuring scale in psychosis group. It means higher the age of caregivers lower the level of burden of care. It could be explained as older caregivers have more maturity and experience in handling the family interaction that is affected by the illness of patient. This finding is also in consonance with the observations being made in earlier studies.[15, 17]

In psychosis group education of caregiver showed significant negative correlation with two areas of burden, e.g. subjective burden and financial burden. It might be because of educated caregivers could understand the actual nature of illness of patient, their awareness in more efficient manner than less or uneducated caregivers. At the same time educated caregivers can solve the financial problems more skillfully than uneducated or lesser educated caregivers since educated caregivers are employed in jobs which are more lucrative or profitable in terms of remunerations than uneducated or less educated caregivers. From these findings we could say that education can have a moderating effect on caregivers’ burden. This particular finding of our study was at conflict with finding of Chakrabarti et al study[27], which showed that educational level of both patients with psychotic disorder (bipolar disorder) did not have any significant bearing on the burden of care. But in our study one limitation was lesser sample size whereas in Chakrabarti et al study sample size was much higher (n=90). But our finding regarding education of caregivers’ and burden of care is consistent with the finding of Gutiérrez-Maldonado et al study[28]. These authors had
conducted a study on sixty-five caregivers of patients with schizophrenia in Arica, Chile and they found that burden tended to be very high, particularly for mothers, caregivers with lesser level of education, caregivers of younger patients and patients with the history of more hospitalizations in the past 3 years.

In early onset epilepsy significant positive correlations were observed between education and routine family activities and education and family interactions. It means higher education to caregivers would increase burden in those two areas. It can be explained as: In epilepsy educated caregivers might not give higher importance to these areas since epilepsy is recognized as core neurological disorder and this view of them would likely to cause higher burden to them. Another explanation can be educated caregivers are usually engaged in more skilled jobs which demand more involvement and due to this they cannot focus on core family affairs and ultimately those areas become “Achilles’ Heel” to them. Significant negative correlation was observed between duration of illness and impact on mental health of caregivers and duration of illness and family leisure. In can be explained as: Caregivers who have adolescents with chronic illness have to adapt themselves with the situation and devise suitable plans in accordance with the demands of the situation. These people might as well have higher skills to compartmentalize things, i.e. keeping patient care and fulfillment of greater family needs separate.

In case of early onset psychosis group it was observed that longer the duration of illness lesser the level of financial burden and lesser impact on the physical health of family members. Explanation of this occurrence could be in the long run family members tend to become more adaptive and skillful to get along with the situation as well as managing funds for patient care. Previously done studies on the same issue also suggested that that some patient-centred variables, e.g. may work as pivotal factors in developing family burden. These factors are: the severity of illness, length as well as number of hospitalizations, duration of illness and the quality and level of socio-occupational functioning of patients. This way this particular finding of our study is in consonance with these studies.

In present study in psychosis group age of onset could not emerge as potential factor in influencing burden of care but surprisingly reverse picture was seen in epilepsy group where significant negative correlations were there between age of onset and financial burden and subjective burden. It means earlier the age of onset higher the financial and subjective burden. Caregivers have harrowing experiences if their children are detected with epilepsy in earlier phase of life and they find themselves at loss if their children are advised to undergo long term treatment. In many cases caregivers are found to be terribly upset when their child is diagnosed with epilepsy, chiefly because of anticipating stigma from others. Apart from that in many occasions early onset epilepsy can become more severe than adult forms and often require prolong treatment with multiple drugs. Many studies reported poor prognosis with early age of onset and good prognosis with adult age of onset.

Due to this factor family with such patients often has to face financial difficulties. In earlier studies factors like ‘severity of the illness’, ‘unpredictability of seizures’ and ‘intrusion of illness in the academic performance of children’ are often emerged as pressing factors to caregivers, especially parents. These way caregivers tend to have
the feeling of being burdened\textsuperscript{22-24}. Caregivers, especially parents of epileptic children often have a sense of loss and despair not to have a child who can be called as ‘normal’ in all sense\textsuperscript{25-26,30}.

In present study though the level of caregivers’ burden in epilepsy group was seen to be significantly lower than that of psychosis group, but having epilepsy itself and requirement of long term pharmacotherapy might have some role in generating the feeling of burden in caregivers. Significant positive correlation was found between age of caregivers and financial burden. This finding can be explained as, with the growing age caregivers become less able to deliver care to their ailing children since they themselves tend to become dependent on others to fulfill their own needs, so taking the responsibility of their ill children becomes a burdensome job to them.

Conclusion

This study would be useful to enlighten us about various facets of caregiving of adolescents with psychosis and epilepsy. Caregiving holds a key position in the treatment and rehabilitation of these patients. Success of treatments and rehabilitations are largely depending on the caregiving. If caregiving is found to be inadequate or improperly done then success of the intervention would likely to be doubtful. This study was carried out on small samples so in future such kind of study can be done on large samples in order to get more generalized conclusion in this regard.

Acknowledgement

Authors of this study are deeply indebted to the Administration of the Central Institute of Psychiatry, Ranchi, Jharkhand, India for allowing them to use their infrastructure and clientele for the purpose of the study. Authors would also like to express their gratitude to all the patients and their caregivers who had been selected in the study.

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ORIGINAL PAPER

Readiness for Behavioural Change and its Relation to Health-related Quality of Life in Opiod Dependents Patients

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Abstract

Study on motivational readiness for change is crucial to promote understanding of behavioural change among Methadone Maintenance Treatment (MMT) patients. A widely used method recently is via Stages of Change and Treatment Eagerness Scale for drug abusers (SOCRATES-8D). The aims of this study were to: 1) determine the general level of readiness for change, 2) assess differences in terms of readiness to change (RtC) based on socio-demography and clinical characteristics and 3) compare RtC with different health-related quality of life (HRQOL) levels. Methods: A convenient sample of MMT volunteers from Terengganu, Malaysia was enrolled. The SOCRATES-8D was administered (3 subscales: Likert-type responses 1-5; higher score, better RtC). Data was analysed using SPSS 15, employing descriptive statistics and non-parametric tests for score comparisons. Results: The mean age of 55 Malay respondents was 37.0 years, male (98.2%), ≤ lower secondary qualification (65.5%) and addiction period > 15 years (52.7%). Generally the Recognition level was “low”, Ambivalence and Taking Steps were moderately-rated. Most of them within unsatisfactory levels of RtC. Abusers with < 20 months treatment were significantly “more ready” for behavioural changes (p<0.05). However, no statistical significance was detected in all stages of RtC between patients with different HRQOL profiles (p>0.05). Conclusion: Findings demonstrated that patients were rather ready to adopt positive behavioural changes regardless of their socio-demographic backgrounds. Thus continuous efforts and psychosocial support from various authorities should be geared towards enhanced readiness as part of ensuring the success of MMT programme in the future.

Keywords: Behavioural Change, Opioid Dependents, Methadone Maintenance Treatment
Introduction

Opiate dependence remains a global major health issue and is a classic example of a chronic relapsing disorder. Compared to the general population, opioid-dependent individuals encounter a much higher risk of death, contracting infectious diseases and are plagued with psychosocial problems. From the statistics of the World Drug Report 2010, the United Nations has estimated that between 155-250 million people or 3.5% to 5.7% of the total population aged 15 and above had used illicit substances in 2008 - including more than 15 million of opiate users worldwide after cannabis and amphetamine-type stimulant users. The global epidemic of opioid use continues to spread and appears to be an increasing burden, mainly in developing countries and particularly in South-East Asia and Western Pacific regions.

The multiple problems of opioid dependents understandably require a more comprehensive rehabilitation programme that utilizes both pharmacological substitution therapy and psychosocial support. The WHO states that Methadone Maintenance Treatment (MMT) is a major public health tool in the management of opioid dependents. Numerous studies have demonstrated the efficacy of MMT in reducing illicit drug consumption and criminal behaviours, improving the rehabilitation of intravenous opioid abusers and lowering the prevalence of HIV/AIDS infection. It is focused on innovative treatment and prevention of relapse. Not an exception in Malaysia, our government authority has also taken bold steps and expanded optimal efforts to ensure the effectiveness of MMT programme. This was propelled by the ultimate goal to become a drug-free nation by 2015.

Nonetheless, MMT is not without its drawbacks. These include several problems relating to both limited patient as well as community acceptance. Furthermore, Malaysia’s drug addiction problem continues to escalate. Relapse rate in persons who are dependent on drugs discharged from Drug Rehabilitation Centres known as “Pusat Pemulihan Penagihan Narkotik” were quoted to be as high as 90%. There were severe overcrowding in prisons, with huge sums of money being spent on compulsory drug rehabilitation services and Malaysia possessed unfortunately the highest proportion of HIV/AIDS infections related to injecting drug abuse in the western Pacific region i.e. 77%. Although the MMT treatment has been shown to be effective, relapse inevitably still occur. Therefore, attempts to promote behavioural change instead of focusing solely on treatment should be incorporated as part of the total medical management.

The course of drug addiction and the cognitive dimensions of behavioural change i.e. readiness to change (RtC) and the confidence level in ability to change in Malaysian addiction treatment programmes are still not well described. RtC is generally accepted as an important factor in determining how individual behave with regard to tackle and changing substance misuse problems. In the recent years, most discussions of motivation to change behaviour have been dominated by the stages of change or Transtheoretical Model (TTM). The TTM of behavioural change has provided an increasingly popular model for understanding how people intentionally modify addictive behaviours. Any changes of individual behaviours are expected to undergo progress through discrete stages as suggested by this model. TTM has been re-adapted and modified several times with the
most popular version identifying the five important stages of Precontemplation, Contemplation, Preparation, Action, and Maintenance\textsuperscript{15}.

The Stages of Change Readiness and Treatment Eagerness Scale (SOCRATES), the Readiness to Change Questionnaire (RCQ) and the University of Rhode Island 8D\textsuperscript{18}. A shorter version (19-item) of the SOCRATES was later developed and was shown to be related to the longer scale (39-item). The SOCRATES-8D yields three subscales namely Recognition, Ambivalence and Taking Steps\textsuperscript{16}. The Recognition resembles the Precontemplation and Preparation stages whereas the Ambivalence subscale reflects the Contemplation stage. On the other hand, Taking Steps subscale included items originally intended to assess Action and Maintenance based on the TTM\textsuperscript{13,19}. In attempts to help drug abusers remain abstinent as well as to modify their attitudes related to constant illicit drug use and to address psychosocial issues, it is deemed beneficial if the current practice is embedded with strong behavioural aspects. Besides, patients self-reported outcomes such as health-related quality of life (HRQOL) have also become an increasingly important source of information in healthcare. The requirement for long-term treatment and limited curing effect of substance misuse problem recently has created a shift from cure to care with attention to the patients’ perspectives\textsuperscript{20}. In this context, HRQOL profile is useful in providing crucial information on the impact of disease, treatment and well-being\textsuperscript{21}. Therefore, in addition to relying primarily on pharmacological intervention, it was much desired if treatment could be tailored accordingly with regard to the individual’s RtC as well as HRQOL.

Change Assessment Scale (URICA) are the commonly used multi dimensional measures of stage of change\textsuperscript{16,17}. The SOCRATES was developed in parallel to the URICA and it initially provides a measure of stage of change specifically for alcohol problems, the SOCRATES-8A [16]. The instrument has subsequently been adapted to assess stage of change for drug use known as SOCRATES-8D. To the best of our knowledge, no published studies have addressed the issue of motivation RtC and HRQOL in terms of measuring substance abuse treatment outcomes among MMT patients in our country especially in the East Coast region of Peninsular Malaysia. The aims of this study were therefore to determine the general level of readiness for change, to assess differences of RtC based on socio-demographic and clinical characteristics and to compare RtC level of opioid abusers with different HRQOL profiles.

**Methods**

**Study design and sample selection**

This project was designed as a cross-sectional study involving patients who were enrolled in the MMT programme recruited from a pioneering MMT centre in the East Coast of Peninsular Malaysia. The respondents consisted of opioid abusers who were enrolled in February 2010 who fulfilled the inclusion criteria as such: 1) age more than 18 years; 2) able to provide the written consent; 3) established dependency or addiction through Opiate Treatment Index and scheduled urine test by the physician in-charge; 4) capable to answer and complete the questionnaire and 5) volunteer opioid abusers underwent MMT programme. The exclusion criteria consisted of these traits: being diagnosed with acute medical and/or psychiatric disorder and exhibiting violent behaviour, suicidal tendency or psychotic profile. Those who consented were recruited...
and asked to complete a brief form entailing their socio-demographic details, SOCRATES-8D questionnaire and WHOQOL-BREF.

**Study instruments**

The first instrument employed was the SOCRATES-8D which was originally designed by Miller and Tonigan. It comprised of 19 items and measured three relatively independent subscales: Ambivalence, Recognition and Taking Steps. The SOCRATED-8D responses are scored on a 5-point Likert scale ranging from (-2) = Strongly disagree to (+2) = Strongly agree. To facilitate interpretation, the SOCRATES-8D scale was renumbered so that 1 = Strongly disagree, 2 = Disagree, 3 = Unsure, 4 = Agree to 5 = Strongly agree, were equivalent to the response scales of other instruments such as RCQ and URICA. The first subscale was meant to detect Recognition level which contained 7 items with a total score between 7 to 35. The second subscale was to determine Ambivalence level which contained 4 items with total score ranging from 4 to 20. The last subscale measured Taking Steps which was sampled by 8 items (minimum score = 8, maximum score = 40).

The interpretation of SOCRATES-8D scores is based on a sample of 1,726 respondents in an alcohol treatment programme. Each level of RtC was interpreted as: 1 = very low, 2 = low, 3 = medium, 4 = high and 5 = very high (Table 1).

<table>
<thead>
<tr>
<th>Decile Scale</th>
<th>Recognition</th>
<th>Ambivalence</th>
<th>Taking Steps</th>
</tr>
</thead>
<tbody>
<tr>
<td>90 (Very High)</td>
<td>-</td>
<td>19-20</td>
<td>39-40</td>
</tr>
<tr>
<td>80</td>
<td>-</td>
<td>18</td>
<td>37-38</td>
</tr>
<tr>
<td>70 (High)</td>
<td>35</td>
<td>17</td>
<td>36</td>
</tr>
<tr>
<td>60</td>
<td>34</td>
<td>16</td>
<td>34-35</td>
</tr>
<tr>
<td>50 (Medium)</td>
<td>32-33</td>
<td>15</td>
<td>33</td>
</tr>
<tr>
<td>40</td>
<td>31</td>
<td>14</td>
<td>31-32</td>
</tr>
<tr>
<td>30 (Low)</td>
<td>29-30</td>
<td>12-13</td>
<td>30</td>
</tr>
<tr>
<td>20</td>
<td>27-28</td>
<td>9-11</td>
<td>26-29</td>
</tr>
<tr>
<td>10 (Very Low)</td>
<td>7-26</td>
<td>4-8</td>
<td>8-25</td>
</tr>
</tbody>
</table>

In the lower score limit of the Recognition subscale, patients maybe unaware that they had problems with drugs and do not intend to change the addictive behaviour. Those who score highly on Recognition perceive themselves to have a problem related to their illicit drugs use. On the other hand, they tend to express a desire for change and to perceive that harm would continue if they do not change.

Occasionally patients are unsure if they are in control of their addiction problem or are still using too much drugs. This scenario reflects Ambivalence or uncertainty with regard to their perceived control over drug and drug problems. Thus a higher score in the Ambivalence subscale reflects a higher degree of uncertainty and indecisiveness to change their addictive behaviours. This subscale has been shown to be positively linked to continuous drug use. On the other hand, lower Ambivalence score indicates
that patients are quite aware about their drug-taking habits i.e. being in control of their addiction problems (therefore a favourable outcome).

High scores in Taking Steps signalled that patients are already “doing things” to make a positive change in their addiction problems and may have experienced some success in this regard. Change is underway and they may require help to persist or to prevent relapsing. Low scorers report that they are not currently doing things to change their addiction problem and have not made such changes recently\(^{16}\).

The second instrument administered was the WHOQOL-BREF which represents a shorter 26-item version of the WHOQOL-100\(^{24}\). The WHOQOL-BREF was selected based on the Ministry of Health’s guidelines and policy for MMT treatment evaluation. The WHOQOL-BREF includes four domains: Physical Health, Psychological, Social Relationship and Environment and 2 single items consisting of Overall HRQOL and General Health item\(^{25}\). The item scores ranged from 1 to 5, with higher scores denoting better HRQOL\(^{26}\). The median score of each domain was calculated. If the result was lower than the median score of Overall HRQOL, this was categorized as poor HRQOL. On the other hand, good HRQOL level was considered if the result was either equal to or more than the medium score of Overall HRQOL.

**Statistical analyses**

This study employed the Statistical Package for Social Sciences version 15 (SPSS 15) for data analysis. All socio-demographic data was analysed descriptively and presented as frequencies as well as percentages. Wherever relevant, chi-square test for goodness of fit was used for the analysis of single categorical variable. Test of normality was also employed to test data distribution of the variables, in which the score distribution was not normally distributed as indicated in the significant value of Shapiro-Wilk statistic (p < 0.05). Therefore, tests’ for subsequent univariate analysis were carried out using non-parametric techniques. The general RtC level was initially presented descriptively in the form of mean, median and standard deviation. The Mann-Whitney U test was utilised to test for group comparisons for RtC level based on socio-demographic variables which were presented as mean rank and its corresponding p value. The value of p < 0.05 was considered significant.

**Results**

**Socio-demographic characteristics**

A total of fifty-five patients were recruited in this study from Kuala Kemaman Methadone Clinic (KKMC) from an eligible pool of 65 patients (response rate = 84.6%). Nevertheless, only 41 patients had completed WHOQOL-BREF and the remaining 14 patients refused due to miscellaneous reasons such as working-time constraints and involved for another activities organised by the authority. KKMC was selected based on its higher retention rate as compared to another 7 treatment centres involved in MMT programmes in Terengganu (3 public hospitals, 4 government clinics). For the overall patients, the mean age was 37 years (±7) ranging from 23-55 years. They were predominantly male (98.2%) and all were Malays. Most respondents had studied in secondary school (87.3%), have been addicted for less than 15 years (52.7%) and were living with their families (67.3%). With the exception of addiction duration, all other socio-demographic variables were significantly different in their frequencies ($\chi^2 = 0.16$, df = 1, p = 0.686) (Table 2).
Table 2. Socio-demographic characteristics of study respondents (n = 55).

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Median</th>
<th>Minimum-maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>37.0</td>
<td>7.1</td>
<td>37.0</td>
<td>23 - 55</td>
</tr>
<tr>
<td>Dosage (mg)</td>
<td>66.6</td>
<td>24.3</td>
<td>65.0</td>
<td>20 – 125</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Variables</th>
<th>Frequency (n)</th>
<th>Percentage (%)</th>
<th>χ² (df)</th>
<th>p value*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Male</td>
<td>54</td>
<td>98.2</td>
<td>51.07 (1)</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>1</td>
<td>1.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
<td>14.98 (2)</td>
<td>0.001</td>
</tr>
<tr>
<td>Single</td>
<td>27</td>
<td>49.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>23</td>
<td>41.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Divorced</td>
<td>5</td>
<td>9.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Occupation</td>
<td></td>
<td></td>
<td>30.56 (1)</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Employed</td>
<td>48</td>
<td>87.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unemployed</td>
<td>7</td>
<td>12.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Living arrangement</td>
<td></td>
<td></td>
<td>6.56 (1)</td>
<td>0.010</td>
</tr>
<tr>
<td>Family</td>
<td>37</td>
<td>67.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alone</td>
<td>18</td>
<td>32.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
<td>113.95 (3)</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>STPM/Diploma (equivalent to Cambridge A-levels)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Secondary</td>
<td>48</td>
<td>87.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary</td>
<td>3</td>
<td>5.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No formal education</td>
<td>1</td>
<td>1.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Addiction duration</td>
<td></td>
<td></td>
<td>0.16 (1)</td>
<td>0.686</td>
</tr>
<tr>
<td>≤ 15 years</td>
<td>29</td>
<td>52.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt; 15 years</td>
<td>26</td>
<td>47.3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: * = Chi-square test for goodness of fit, p < 0.05 = significant.

Readiness to change: overall

Generally, among the three stages, Ambivalence (median=15, range 4-20) and Taking Steps (median=34, ranging from 16-40) emerged within the medium category followed by Recognition which was rated the poorest and considered to be rather low (median=27, range 10-35). The scores ranged from very low to very high. Further details were shown in Table 3.

Table 3. The score distribution for Socrates-8D by stages of change (n = 55).

<table>
<thead>
<tr>
<th>Stages</th>
<th>Median (Mean ± SD)</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recognition</td>
<td>27.00 (26.18 ± 4.87)</td>
<td>10</td>
<td>35</td>
<td>Low</td>
</tr>
<tr>
<td>Ambivalence</td>
<td>15.00 (14.53 ± 2.98)</td>
<td>6</td>
<td>20</td>
<td>Medium</td>
</tr>
<tr>
<td>Taking Steps</td>
<td>34.00 (33.82 ± 4.33)</td>
<td>16</td>
<td>40</td>
<td>Medium</td>
</tr>
</tbody>
</table>
Interestingly, the proportion of respondents within the very low to low level of Recognition was nearly 90%. About three-quarter of the respondents were in the low to medium level of Ambivalence while 63% of them were already ‘taking steps’ to change. Across all respondents, majority were still at early stages of behaviour alteration i.e. still in the process of recognising their problems or were uncertain about their next move (Table 4).

Table 4. Respondent distribution for Socrates-8D by stages of change (n = 55).

<table>
<thead>
<tr>
<th>RtC Levels</th>
<th>Recognition n (%)</th>
<th>Ambivalence n (%)</th>
<th>Taking Steps n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very High</td>
<td>0 (5)</td>
<td>5 (9.1)</td>
<td>8 (14.5)</td>
</tr>
<tr>
<td>High</td>
<td>3 (5.5)</td>
<td>7 (12.7)</td>
<td>11 (20)</td>
</tr>
<tr>
<td>Medium</td>
<td>4 (7.3)</td>
<td>26 (47.3)</td>
<td>25 (45.5)</td>
</tr>
<tr>
<td>Low</td>
<td>25 (45.5)</td>
<td>15 (27.3)</td>
<td>10 (18.2)</td>
</tr>
<tr>
<td>Very Low</td>
<td>23 (41.8)</td>
<td>2 (3.6)</td>
<td>1 (1.8)</td>
</tr>
</tbody>
</table>

Readiness to change versus socio-demography

Based on the education level, significant difference was only detected in Taking Steps between respondents with different educational background. Our respondents with less than PMR education (lower secondary qualification) were significantly more ready to “take steps” to change their behaviours compared to the more educated respondents (SPM education and above). However, no other significant difference was observed among patients on different methadone dosages or addiction durations (Figure 1).

![Figure 1](chart.png)

Figure 1. Differences of readiness to change level based on education level (n = 55). p < 0.05 = significant; Error bar = 95% confidence interval.
Readiness to change versus treatment duration

Based on the duration of treatment, respondents who received less than 20 months treatment reported significantly better RtC scores than those who were still in MMT programme after 20 months who recorded relatively lower RtC levels. Overall, respondents in the early treatment phase were more ready to modify their behaviour compared to their late-phase counterparts in all the subscales investigated (Figure 2).

![Figure 2](image)

**Figure 2.** Differences of readiness to change level based on treatment duration (n = 55).

\( p < 0.05 = \) significant; Error bar = 95% confidence interval.

Readiness to change versus health-related quality of life

No significant difference was exhibited in all stages of change in relation to both poor and good HRQOL levels, although scores were generally higher for those in the former group (Table 5).

**Table 5.** Differences of readiness to change level based on health-related quality of life (n = 41).

<table>
<thead>
<tr>
<th>Stages</th>
<th>Mean Rank</th>
<th>p value*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Poor HRQOL</td>
<td>Good HRQOL</td>
</tr>
<tr>
<td>Recognition</td>
<td>23.0</td>
<td>19.3</td>
</tr>
<tr>
<td>Ambivalence</td>
<td>21.4</td>
<td>20.6</td>
</tr>
<tr>
<td>Taking Steps</td>
<td>22.4</td>
<td>19.8</td>
</tr>
</tbody>
</table>

Note: * = Mann-Whitney U test, \( p > 0.05 = \) not significant.
Discussion

There still remain many questions to be answered concerning when, how and why persons who are dependent on drugs make efforts to change their lifestyle. To better understand how ready they change their substance use habit and why a large number of them turn to relapse, it seems reasonable to look more closely at the subjective and dynamic behavioural aspects and patients’ RtC apart from pharmacological treatment alone. With this awareness as a starting point, the concept of motivation to change and motivation for treatment have been theoretically illuminated and increasingly employed in addiction research during the last 20 years. Furthermore, positive projection based on the 2000 population census.

The majority of our respondents was still not ready to change and possessed low to medium level of RtC. It was probable that they were still unclear with their goals of receiving MMT towards being drug-free and at the same time to promote their behavioural change. In support of this, Miller and Rollnick reported that the lack of the confidence level in patients and poor support during the treatment could be the factors underlining this phenomenon.

The Recognition level was unexpectedly low. Unsatisfactory early-stage behavioural changes could be due to lack of proper education and information received by the patients regarding the importance and benefits of drug-free condition. Besides, this situation might be indicative of patients having lack of awareness towards the harmful effects of drugs. They might have not actually realised that their involvement in illicit drug use activity had resulted in difficulties in their lives which has led to increased community isolation and serious adverse events.

Both the Ambivalence and Taking Steps were similarly at medium level. This finding suggested that patients were still uncertain on whether they were in control over their drug activities or whether they were ready to change and recover from abusing drugs. However, concrete evidence to support these
findings still requires extensive investigations due to the lack of behavioural studies particularly among illicit drug abusers in our country.

Overall, our respondents fitted mostly into different levels of RtC in which most were in the early stages of change. This was in parallel with the other findings which showed that respondents with drug problems who seek or participate in treatment differ significantly in their levels of RtC and most patients fared relatively low on Recognition aspect i.e. could not acknowledge the extent of their drug problem.

Socio-demographic parameters did not seem to be influential on RtC level except for education level. Interestingly, respondents with lower education level possessed significantly more encouraging profile in Taking Steps compared to those more educated ones. With regard to the context of behavioural change involving a big sample of smokers, Velicer and colleagues discovered that education level has also been shown to be negatively-associated with stages of change. As the level of education increased, they were less likely to stop smoking. In fact, most drug addicts in Malaysia were not adequately-educated whereby those who had less than PMR education was estimated at 65.5% in 2009. On closer examination of our data, more than half of the respondents with lower education were inevitably grouped into the early enrollment phase of the treatment programme. This could probably be one of the reasons why respondents with lower education were significantly readier to “Take Steps” compared to their counterparts.

In terms of treatment duration, those who were in the early part of treatment enrollment possessed comparatively better attitudes towards RtC and were significantly “more ready” for behavioural changes than respondents who had been on treatment for longer. In the general perspective, if patients were not ready, unmotivated and less confident to change, they would not seek treatment for their addiction problems in the first place. This was in parallel with the definition of self-efficacy by Vries and colleagues who postulated that self-efficacy refers to the patient’s confidence and ability to take action in difficult situations. Hence, higher level of readiness should be expected among “newer” patients. Newer MMT patients were generally in high spirit and exhibit greater enthusiasm to recover. However, as the treatment duration prolonged, stress would slowly develop and this could diminish their RtC. Based on these findings, we suggest the involvement of support groups, routine counseling or relaxation activities to assist their recovery process.

The relationship between RtC vs. HRQOL did not appear to be significantly different in this small-scale exploration as yet, outcomes which maybe attributed to the small sample size (probably diminishing the possibility of detecting statistical differences between the parameters). Unsurprisingly, this finding was in contrast to a previous study which claimed that the HRQOL outcomes among substance abusers were significantly improved along with positive behavioural changes as well as increased duration of abstinence. It is possible that future research in larger samples using the combination of both quantitative and qualitative methods could help confirm if any association exists.

Some limitations should not be ignored when interpreting the results of the present study. This included a relatively limited sample size and the non-random selection of
participants due to the strict inclusion criteria of the Ministry of Health. The fact that this recruitment only encompassed one large district (Kuala Kemaman MMT Clinic) in Terengganu state may have also confined our study outcomes. The associations investigated here should be re-examined among more diverse samples of participants to determine whether the present findings are generalisable to the majority of those who are dependent on drugs in our country. Furthermore, this study only focused on intrinsic behavioural changes without fully exploring the extrinsic motivation to change or external pressures that could be involved. A more comprehensive study would be beneficial if the latter factor could also be investigated. In addition, only univariate analysis was employed to test between groups differences in which findings could be strengthen if multivariate analysis could be conducted, had the sample been larger.

Therefore, as an important component of effective treatment planning, physicians might find it helpful to identify the stage of change and HRQOL level which characterizes each patient. Based on this, individualised strategies or programmes to suit and at the same time to enhance RtC and HRQOL level among patients could be recommended. For example, training to develop drug refusal skills may be well received by persons who are ready to active change but cognitive and motivational strategies (such as enhanced consciousness) might be more appropriate for persons who are only at Contemplation stage\textsuperscript{40}. The effectiveness of treatment could be additionally increased through mechanisms to motivate patients towards taking active efforts for behaviour alteration, a vital component which is still lacking in our healthcare management today.

Generally, our findings seemed to suggest that the motivation to increase RtC among opioid abusers was still inadequate and needs major improvement. Apart from focusing on pharmacological treatment, respondents’ motivation to change their behaviours and HRQOL outcomes need to be given special attention. Motivation is a crucial first step toward any action or change in behaviour. Respondents generally would not perform desired behaviours unless they were motivated to do so\textsuperscript{41}. Therefore, motivational counselling and emotional group support could be beneficial to enhance readiness as well as improving their behaviours and HRQOL levels.

**Conclusion**

In view of the unsatisfactory RtC levels among our MMT patients, these findings strongly supported the need to incorporate motivational components such as readiness and behavioural change in MMT programme. Since many patients are at different stages of RtC, interventions should target the specific stages in order to assist patients to move to higher stages i.e. Recognition and Taking Steps, thus promoting behavioural change. In practice, this means that treatment must be tailored as individually as possible. Socio-demographic characteristics did not seem to be influential on the RtC level except that those with lower education background and short duration of MMT showed better outcomes. However, no statistical difference was detected in all stages of behavioural change between patients with poor and good HRQOL status. Thus, motivational programmes plus psychosocial support from various authorities are also crucial to overcome drug misuse problems allowing longer and more effective treatments, sustaining the benefits and reducing the risk of relapse after pharmacological therapy.
Parts of the findings from this exploratory study could encourage further research to understand the dynamics of behavioural change and HRQOL profiles among this specific group.

Declaration of interest
There is no conflict of interest that could be perceived as prejudicing the impartiality of the study reported.

Acknowledgements
The authors wish to express their appreciation to the Dean of Faculty of Medicine and Health Sciences UniSZA and the Terengganu State Director of Health for their support during this study. A special note of thanks also goes to Dr. Masran Mohamad, Dr. Azmi Hassan, Dr. Maziah Ishak, Dr. Nor Aizan Abdullah, Zukifli Mohd, Rohayu Abd. Rahman, Mohd Shafiq Firdaus of Kuala Kemaman Clinic and Pejabat Kesihatan Daerah Kemaman for their kind cooperation and assistance. Last but not least, we truly appreciated the invaluable participation of the MMT clients of Kuala Kemaman Clinic without whom this project would not have been successful.

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Work-Related Stress Among Healthcare Providers of Various Sectors in Peninsular Malaysia

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Abstract

Objectives: Occupational stress among healthcare workers is an important concern due to its crucial contribution in attaining maximum job output and optimal quality of working life. Our study aims to compare job stress levels of healthcare employees based on 1) sector, 2) category and 3) specialisation.

Methods: Stress severity and frequency were evaluated using the 9-point scale Job Stress Survey (Job Stress, Job Pressure, Lack of Support). A cross-sectional sample of 223 healthcare providers were enrolled from seven health institutions in Peninsular Malaysia (East Coast = 55%; mean age = 30 years; female = 78.9%; < 2 years experience = 35.9%; government-based = 48%; supportive = 62.8%). Results: No significant difference was found between government and private sector workers. Supportive staff reported significantly higher stress frequency in contrast to professionals who demonstrated significantly higher stress severity in all dimensions (p < .05). Within the supportive group, radiographers were the most stressed, followed by nurses and medical laboratory technologists (p > .05). Research-based professionals experienced significantly worse stress frequency in all components compared to professional practitioners (p < .05).

Conclusion: Because stress levels are affected by job category and specialisation, flexible strategies to ensure employees’ job productivity, contentment and personal well-being should be implemented.

Keywords: Work-Related Stress, Healthcare Provider, Peninsular Malaysia

Introduction

Internationally and locally, occupational stress has become an issue of great concern over the last decade. It represents an important concern among healthcare workers due to its crucial contribution in attaining maximum job output and optimal quality of working life. Because the exact meaning and a universal definition of occupational stress has not been finalised, the term occupational stress has been commonly used interchangeably with job stress and work (or work-related) stress by previous researchers.
Job stress was defined as the harmful physical and emotional responses which occurred when the requirements of the job do not match the capabilities, resources, or needs of the worker. Additionally, it has also been referred to as the non-specific negative response of the body to demand in the workplace. Job stress is not necessarily considered as a detrimental thing as in the early stages, job stress can actually stimulate the body and enhance work performance. However, only when it is continuously stimulated and left unchecked that it would begin to affect a person’s productivity, leading to possible unwanted consequences on a person’s health. Even worse, job stress could result in burnout, a form of emotional and mental exhaustion, depersonalization and reduced sense of personal accomplishment.

The past three decades witnessed a steadily escalating public concern on work-related stress due to its unfavourable effects on health and the consequent productivity, creativity and economic loss. Job stress is even more crucial in the healthcare industry due to the common problems of inadequate staffing, high public expectations, long work hours, exposure to infectious diseases and hazardous substances, threat of malpractice litigation and the constant encounters with death and dying. Studies indicated that healthcare workers have long been known to be a highly stressful group and were worryingly associated with higher rates of psychological distress than many other workers of different sectors. The impact of these unwarranted outcomes did not only affect providers themselves, but it could also compromise patients’ health and welfare.

Around the world, investigations have been widely conducted in the western societies but only limited studies have been documented among the Asian countries such as Japan, Korea, Taiwan and China. The latest studies have all pointed out that job stress plays a major role in health problems, occupational dissatisfaction and could ultimately lead to burnout syndrome. For instance, both diminished general health and mental health scores have been related to perceived occupational stress. Work stress has also been singled out as the risk factor with the highest relevance for poor health, whereby its interaction with night shiftwork actually resulted in risk for poor sleep. Other evidence of adverse effects on health include cardiovascular diseases, psychiatric disorders, psychosomatic symptoms, menstrual patterns and in extreme cases, suicide. In addition to a plethora of health consequences, job stress negatively affects work satisfaction and organisational commitment which could further reduce worker retention rates. These factors have been cited by healthcare employees as “somewhat or very” likely reasons for them to leave their position in the next 12 months.

Accordingly, our study aimed to compare job stress levels of healthcare employees based on occupational sector (government versus private), category (professional versus supportive) and specialisation (specific job descriptions). The findings are deemed to provide an insight of work-related stress profiles among healthcare providers in Peninsular Malaysia, at least an overview of the most current situation. In the light of recent efforts from the country’s higher authorities to increase healthcare service efficiency and performance in the midst of existing on-and-off public complaints, we believe that this investigation would supply some guide for future job stress management strategies in tandem with workers’ own needs and views.
Methods

Study Design And Sample Selection
A prospective cross-sectional survey was carried out in seven identified public and private health institutions in Terengganu, Kelantan, Pahang, Selangor, Kuala Lumpur, Penang and Negeri Sembilan. Prior to respondent enrolment, a convenient sample of healthcare providers were randomly identified and verbally invited to participate by the researchers. Once voluntarily agreed, they were forwarded a package consisting of the Respondent Biodata Form and the Job Stress Survey. Upon completion, representative from each institution gathered the instruments and sent them back to the Principal Investigator through pre-paid Post Express envelopes.

Respondent Biodata Form
Participants initially completed a socio-demographic survey entailing their gender (item 1), age (item 2), marital status (item 3), ethnic origin (item 4), employment (item 5), working place (item 6), duration of working experience (item 7), daily working duration (item 8), if they were having any part-time job (item 9), monthly income (item 10), smoking-related habits (items 11 and 12), alcohol-related consumption (items 13 and 14), stress experience (15), health problems (16) and medical leave taken due to stress (17).

Job Stress Survey (JSS)
The JSS represents one of the most widely-used instruments in the literature of occupational stress besides other established tools. Our study employed the original 30-item English version, but with omission of item 1 which was provided as an example question. Altogether, it contained two major job stress dimensions or scales i.e. severity and frequency. Each dimension contained 29 items which further constituted 10 items relating to Job Pressure (JP) and another 10 items asking about Lack of Organisational Support (LS). A further set of 9 items in each scale did not represent any specific component. The Job Stress Severity (JSS) was derived from the mean of all 29 severity items, while the mean of 29 frequency items gave the Job Stress Frequency (JSF). Multiplication of JSS and JSF finally produced the Job Stress Index (JSX). Similarly for JP, the mean of 10 severity and 10 frequency items generated the Job Pressure Severity (JPS) and Job Pressure Frequency (JPF) respectively, of which their product gave the Job Pressure Index (JPX). The same formula and calculation applied to the subscale for Lack of Organisational Support i.e. mean of 10 severity items = LSS; mean of 10 frequency items = LSF and LSS x LSF = LSX. To aid clarification, a diagrammatic description is provided in Figure 1.

Statistical Analysis
Prior to analysis, data was entered and screened for inconsistencies or mistakes using licensed SPSS 14. Respondents’ socio-demographic data was demonstrated descriptively and presented as frequencies and percentages. For categorical data, chi-square test for goodness of fit was conducted. Tests of data normality were carried out on the JSX to determine the nature of data distribution, of which our data failed to fulfill all the usual normality requirements. Outcomes were therefore consistent with a non-parametric distribution which prompted subsequent group score comparisons being tested via non-parametric Mann-Whitney and Kruskall-Wallis tests.
Figure 1. Diagrammatic representation of the JSS and its subscales.

Results

**Demographic Characteristics of Respondents**

A sample of 223 healthcare providers were enrolled from seven health institutions in Peninsular Malaysia (East Coast = 55%; West Coast = 45%) consisting of Hospital Sultanah Nur Zahirah (HSNZ), Kuala Terengganu (17.0%); Hospital Universiti Sains Malaysia (HUSM), Kubang Kerian (8.5%); KPJ Group Healthcare, Kuantan (29.6%); Pusat Perubatan Universiti Kebangsaan Malaysia (PPUKM), Cheras (13.5%); Institut Penyelidikan Perubatan (IMR), Kuala Lumpur (13.0%); Hospital Lam Wah Ee, Penang (9.0%) and Colombia Asia, Seremban (9.4%). Of these, four institutions were government-based (three teaching hospitals and one research institute) while three were private-based organisations. From the 223 respondents, majority was female (78.9%), single (51.1%), Malay (72.6%) with a mean age of 30 years (SD=7.7), ranging from 21 to 56 years old. More than two-thirds (78.0%) were in the range of 21 to 35 years old. Thirty-six percent possessed less than two years of work experience. The average working hour was eight hours per day for most of them (range = 1-10 hours) and over 95% did not have a part-time occupation. Approximately 42% had monthly earnings of between RM2001-RM3000. Sector-wise, 48% of the respondents were working in government-based sector while another 46.6% stayed in private-based sector. More than half were considered as supportive staff category (62.8%), which consisted of nurses, radiographers and medical laboratory technologists (MLTs). Doctors, pharmacists and research officers were all categorized as healthcare professionals, the former two groups considered as “professional practitioners” while the latter being
“research-based professionals”. In terms of job specialisations, nurses made up the most percentage with 31.8%, followed by pharmacists (16.6%), radiographers (15.7%), MLTs (15.2%), research officers (8.1%) and doctors (3.1%). Table 1 provides the detailed descriptions.

Table 1. Demographic characteristics of healthcare providers (n=223).

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Frequency</th>
<th>Percentage</th>
<th>p value*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>47</td>
<td>21.1</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Female</td>
<td>176</td>
<td>78.9</td>
<td></td>
</tr>
<tr>
<td><strong>Marital status</strong></td>
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<td></td>
<td>&lt;.001</td>
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<tr>
<td>Married</td>
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<td>47.5</td>
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<tr>
<td>Single</td>
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<td>51.1</td>
<td></td>
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<tr>
<td>Divorced / Widowed</td>
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<td></td>
</tr>
<tr>
<td><strong>Race†</strong></td>
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<td></td>
<td>&lt;.001</td>
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<tr>
<td>Malay</td>
<td>162</td>
<td>72.6</td>
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<td>Chinese</td>
<td>43</td>
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<td></td>
</tr>
<tr>
<td>Indian</td>
<td>13</td>
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<td></td>
</tr>
<tr>
<td>Others</td>
<td>4</td>
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<td></td>
</tr>
<tr>
<td><strong>Job Sector</strong></td>
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<td>&lt;.001</td>
</tr>
<tr>
<td>Government-Based</td>
<td>107</td>
<td>48.0</td>
<td></td>
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<tr>
<td>Private-Based</td>
<td>104</td>
<td>46.6</td>
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<tr>
<td>Others (Unidentified)</td>
<td>12</td>
<td>5.4</td>
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<tr>
<td><strong>Job Category</strong></td>
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<tr>
<td>Professionals (grade U41 and above)</td>
<td>62</td>
<td>27.8</td>
<td></td>
</tr>
<tr>
<td>Supportive (below grade U41)</td>
<td>140</td>
<td>62.8</td>
<td></td>
</tr>
<tr>
<td>Others (Unidentified)</td>
<td>20</td>
<td>9.0</td>
<td></td>
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<tr>
<td><strong>Job Specialisation†</strong></td>
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<td>&lt;.001</td>
</tr>
<tr>
<td>Doctor</td>
<td>7</td>
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<td></td>
</tr>
<tr>
<td>Pharmacist</td>
<td>37</td>
<td>16.6</td>
<td></td>
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<tr>
<td>Research Officer</td>
<td>18</td>
<td>8.1</td>
<td></td>
</tr>
<tr>
<td>Nurse</td>
<td>71</td>
<td>31.8</td>
<td></td>
</tr>
<tr>
<td>Radiographer</td>
<td>35</td>
<td>15.7</td>
<td></td>
</tr>
<tr>
<td>Medical laboratory technologist</td>
<td>34</td>
<td>15.2</td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td>20</td>
<td>9.0</td>
<td></td>
</tr>
<tr>
<td><strong>Working Experience</strong></td>
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<td></td>
<td>0.665</td>
</tr>
<tr>
<td>&lt; 2 years</td>
<td>80</td>
<td>35.9</td>
<td></td>
</tr>
<tr>
<td>2-5 years</td>
<td>69</td>
<td>30.9</td>
<td></td>
</tr>
<tr>
<td>&gt; 5 years</td>
<td>74</td>
<td>33.2</td>
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<tr>
<td><strong>Monthly Income†</strong></td>
<td></td>
<td></td>
<td>&lt;.05</td>
</tr>
<tr>
<td>&lt; RM 2000</td>
<td>63</td>
<td>28.3</td>
<td></td>
</tr>
<tr>
<td>RM 2001-RM 3000</td>
<td>93</td>
<td>41.7</td>
<td></td>
</tr>
<tr>
<td>&gt; RM 3000</td>
<td>65</td>
<td>29.1</td>
<td></td>
</tr>
</tbody>
</table>

* Chi-square test for goodness of fit. † Total percentage not 100% due to missing data.
Job Stress: Overall Description

Our sample of healthcare providers provided an overall impression of a moderate level of work-related stress particularly in terms of stress severity. Mean ratings for JSS, JPS and LSS ranged from a very narrow interval of between 5.1 to 5.2 whereas frequency evaluations ranged from 2.7 to 3.0 for JSF, JPF and LSF. From readings of the indices - JSX, JPX and LSX, the combination effects of job stress severity and frequency could be considered low. Among the three important aspects examined, job pressure emerged as the main factor which exerted comparatively higher stress levels. A general picture is depicted in Figure 2.

![Box-whisker plot showing a general description of the level of job stress within a sample of healthcare providers in Peninsular Malaysia. Indices are not shown due to being disproportionately off-scale on this plot.](image)

Job Stress: Comparisons By Job Sector

Between both the government-based and private-based sectors, no significant difference was found in terms of stress severity, frequency and index (p > .05). Closer examination of the mean rank however indicated that the government healthcare providers were generally experiencing more occupational stress than those in the private sector in the majority of job stress dimensions – Figure 3. The latter group was only relatively worse off with regard to JPF and JPX.
Job Stress: Comparisons By Job Category

Overall the supportive workers were more frequently stressed as they reported significantly higher JSF, JSX, JPF, LSF, JPX and LSX. On the other hand, the professionals demonstrated significantly higher stress severity in JSS, JPS and LSS (p < .05) – Figure 4.

Figure 3. Work-related stress among government versus private healthcare workers.

Figure 4. Work-related stress levels: Professionals versus Supportive staff.

* p < .05
**Job Stress: Comparisons By Job Specialisation**

Within the supportive group, radiographers were the most stressed, followed by nurses and medical laboratory technologists but these differences did not reach statistical significance – refer to Table 2. Comparisons within the professionals’ group revealed that research-based professionals reported significantly worse stress frequency in all components compared to professional practitioners (p < .05). This former group of workers also indicated higher level of work-related stress in JSS and LSS whereas job stress was only comparatively worse for professional practitioners in JPS (p > .05). Figure 5 illustrates these findings.

**Table 2.** Job stress comparisons within healthcare providers in the supportive category.

<table>
<thead>
<tr>
<th>Job Stress Dimension</th>
<th>Nurse</th>
<th></th>
<th></th>
<th>MLTs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Median Rank</td>
<td>Mean</td>
<td>Median Rank</td>
<td>Mean</td>
</tr>
<tr>
<td>JSS</td>
<td>5.1</td>
<td>71.3</td>
<td>5.1</td>
<td>73.9</td>
</tr>
<tr>
<td>JSF</td>
<td>3.3</td>
<td>70.8</td>
<td>4.1</td>
<td>78.5</td>
</tr>
<tr>
<td>JFX</td>
<td>15.8</td>
<td>70.3</td>
<td>18.7</td>
<td>78.7</td>
</tr>
<tr>
<td>JPS</td>
<td>5.3</td>
<td>73.2</td>
<td>5.2</td>
<td>71.3</td>
</tr>
<tr>
<td>JPF</td>
<td>3.6</td>
<td>72.6</td>
<td>3.6</td>
<td>74.4</td>
</tr>
<tr>
<td>JFX</td>
<td>16.4</td>
<td>71.8</td>
<td>17.2</td>
<td>74.6</td>
</tr>
<tr>
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<td>67.1</td>
<td>5.1</td>
<td>77.9</td>
</tr>
<tr>
<td>LSF</td>
<td>3.1</td>
<td>69.9</td>
<td>4.1</td>
<td>79.8</td>
</tr>
<tr>
<td>LFX</td>
<td>12.7</td>
<td>68.5</td>
<td>20.6</td>
<td>81.7</td>
</tr>
</tbody>
</table>

* Kruskall-Wallis test.
Discussion

In view of the escalating demands from both the health authorities and the society alike for high quality services in the midst of increasing outbreaks and health concerns, the existence of work pressure should also not be allowed to go unaddressed. As human beings, healthcare workers are still equally vulnerable to the negative impact of job pressure which could in turn compromise patient care and result in diminished quality of life for both parties. In extreme cases, patients’ safety also became a concern. Consequently, the health and well-being of members of the healthcare team themselves should always be scrutinized to ensure the best outcomes for patients.

This preliminary study was undertaken to primarily investigate if occupational sector, category and job description exert influence on healthcare providers’ work-related stress levels in the Malaysian scenario, particularly in Peninsular Malaysia. The general stress at work status for all the providers sampled was rather low to moderate, indicating that the situation is still manageable. However, work stress could be made worse by the need to handle sporadic global outbreaks of highly-infectious diseases such as Nipah Encephalitis, Avian Influenza (H5N1), SARS and most recently Influenza A (H1N1) which are spread in extreme rapidness due to the advances in air travel all over the world.

Despite showing no significant differences, the work-related stress trend among government officers seemed to be on the relatively higher side compared to private sectors. This was unexpected, because the
general perception holds that working in the private sector consume longer hours and heavier workload, therefore leading to greater stress level. Nonetheless, the current situation could have changed as the public hospitals are increasingly receiving higher number of patients from all backgrounds with accompanying demand for fast, high quality services. On the other hand, only a certain strata of the society could afford the huge fees charged by private hospitals, hence the lower number of people they cater for. Privatised healthcare institutions also possess stronger resource support in term of available start-of-the-art facilities and equipments, in contrast to government-funded hospitals. Additionally, it is also a noticeable trend that many health senior professionals (especially doctors) have chosen to work in the private sectors after completing their compulsory government service, thus facilitating patient management compared to the majority of younger, inexperienced workers handling sheer number of cases in government hospitals, inevitably leading to work pressure. Essentially, occupational workload is in reality much higher in these institutions. As previously outlined, perceived occupational stress has been associated with young age and low workplace support. Studies all around the world have also repeatedly shown that role/work overload consistently represents one of the main job stressors in the healthcare sector. Because employee workload has been identified as one of the precursors to burnout syndrome among healthcare workers, administrators should be attentive to its early signs in order to promote morale and productivity.

Nonetheless, it was apparent that the supportive staffs were encountering job stress more often than their professional counterparts. In parallel with our findings, in a study among Taiwanese psychiatric nurses, 17.2% complained of being under significant stress “often or always”. Further, an Australian study pointed out that nurses felt stressed on a daily basis of which patient behaviour and unrealistic expectations were the key inducing factors. The problem seemed more apparent for the radiographers and unsurprisingly, significant stress-related health consequences had been documented among radiographers while biomechanical stress has been detected in all anatomical regions studied in medical radiographers. Although the actual reasons were not examined in our sample, it could likely be due to heavy work burden as a consequence of shortage of personnels. Based on our personal observations, in addition to handling numerous cases per day with a limited number of staff, the technical aspects of the X-ray procedure which require sensitive operational care could additionally contribute to work pressure. Another reason could be their moderate level of understanding the English questionnaire as our research assistants indicated that majority were interviewer-administered. Among others, inter-professional conflicts, high workload and lack of decisional involvement plus feeling frustrated and powerless have been cited as reasons for experiencing role stress, particularly among nurses in a variety of healthcare settings. It is hence not unexpected that supportive healthcare staff in general, who possessed little control and authority in their job continue to indicate the existence of work-related stress.

Despite occurring less frequently, our respondents indicated that once encountered, job stress among medical professionals was worse in its intensity. Understandably, the job description, responsibility and burden faced by professionals are clearly different than supportive workers. Within the same cohort, stress also differed in terms of their
specific responsibilities i.e. examining patients or conducting research. It was possible that constant time pressure, dealing with difficult patients and maintaining high levels of concentration were the stress-related problems for professional practitioners. For some physicians, high level of distress stemmed from being assigned to both clinical and administrative responsibilities, a phenomenon very similar in our Malaysian scenario. Besides looking after the patients, they were also consistently required to assume administrative roles, attend meetings/courses, completing forms and handling public complaints. On the other hand, those involved in research duties faced even more severe and frequent stress-related problems. This could range from instrumental technicalities, training research assistants, preparing proposals/reports, presenting/writing scientific papers to securing research funding. Comparatively, practicing professionals would be less stressed when not consulting patients whereas the nature of the researchers’ problems did not heavily depend on patients. This was because emotional exhaustion and occupational distress have been shown to be present in higher percentage of oncologists with direct patient contact compared to those without. Intriguingly, the addition of academic duties somehow reduced physicians’ distress as these were viewed as advancing medicine, probably a pleasurable respite from dealing with patients’ expectations. With further possibility of litigation and ethical threats, the overall predicament of healthcare professionals was clearly more serious than the supportive workers and requires a different set of dealing strategies.

The limitations of our study included one glaring aspect on the use of English JSS which many respondents whom we personally observed could not adequately comprehend. This was especially prominent among the supportive workers and could have affected their responses. However, the internal consistency reliability for all JSS scales ranged from 0.894 to 0.965, well surpassing the usual threshold value of 0.700. Secondly, many did not complete the Section 2 (Frequency of Occurrence) either because of boredom in having to answer similar repetitive statements or because they did not actually experience the stress-related situations given (percentage of zero score ranged from as low as 29.1% to 48.4% for all items). We have unfortunately no reliable means to confirm these. Thirdly, due to routine busyness the enrolment rate for physicians was rather small – resulting in the majority of professional views reflecting the pharmacists’ and research officers’ opinions.

Nevertheless, our findings did generate some useful outcomes and indications to be brought to the attention of employers. In response to the common occupational stress phenomenon, various types of programmes have been introduced for healthcare workers. In Japan, a web-based stress management training programme has demonstrated some positive impacts on job stress while performance recognition has been proven to impose a direct buffering effect on job stress. In addition, some investigators have also recommended matching physical and emotional job resources to job demand in order to counteract the consequent ill-being. A study among nurses in Jordan has indicated that emotional support was the most supportive social behaviour in dealing with stress when confronted with patients’ death and dying issues.

Similarly in Malaysia, employers should continue to assess their employees’ stress
status and embark on initiatives to provide appropriate resources, programmes and support to minimise as well as cope with the occurrence of harmful work-related stress. Time management, anger management, relaxation exercises, family day, reasonable shift schedules, participation in decision-making, power delegation, coping strategies and realistic work expectations would allow employees to have more fulfilled occupational responsibilities. Positive coping mechanisms have also been associated with better job satisfaction. Hence, training employees to master stress resilience capacity could be attempted because it has recently been shown to be a beneficial motivational factor.

We conclude that the overall level of work-related stress among the Malaysian healthcare employees was still within adequate management. However, certain job category and specialisation such as supportive staff, particularly radiographers require closer attention due to their comparatively higher level of stress. Medical professionals too, must be vigilant of the detrimental effect of job stress severity on their well-being. Continuous investigations into occupational needs, demands and stressors in the healthcare sector are definitely warranted.

Acknowledgement

The authors are very grateful to Wong Sok Yee, Ainun Liyana Kamaruddin, Nadziah Ismail and Nurul Ain Saffarudin for their tremendous assistance in data collection and management. Our sincere thanks are also directed to all participants and persons who had either contributed directly or indirectly in this study.

References


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**Email:** peilinlua@unisza.edu.my
Factors Associated with Metabolic Syndrome among Psychiatric Outpatients with Major Depressive Disorder


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Abstract

Background: Metabolic Syndrome is a major concern for the general population but more so for depressed patients. While it is well established that it is highly prevalent among patients who are depressed, none of the local studies identified the factors contributing to the syndrome. Objective: This study aimed to determine the rate of metabolic syndrome and its associated factors (socio-demographic, clinical features and lifestyle risk factors) in depressed patients. Methods: A cross sectional study was conducted on patients with major depressive disorders (MDD) attending psychiatric outpatient clinic in Universiti Kebangsaan Malaysia Medical Centre (UKMMC), a teaching hospital in Kuala Lumpur. A total of 72 outpatients who fulfilled the selection criteria were informed to fast prior to blood taking. The diagnosis of MDD was made based on Diagnostic Statistical Manual Version IV (DSM-IV) while the metabolic syndrome diagnosis was made using the International Diabetes Federation (IDF) criteria based on the patients’ waist circumference, blood pressure, serum glucose level and lipid profile. Results: The rates of metabolic syndrome was 37.5% (n = 27). The results showed significant associations between metabolic syndrome and race (p = 0.043), illness duration (p = 0.043) and pre-existing hyperlipidaemia (p = 0.032). Interestingly, lifestyle factors like physical activity (p = 0.762), dietary intake (p = 0.671), severity of depression (p = 0.161) and the different types of medications (p = 0.242 to 1.000) were not found to significantly associated with metabolic syndrome among the study sample. Conclusions: Metabolic syndrome was found to be disproportionately high among depressed patients. Two significant factors associated with this syndrome were race and long duration of depression (ten years or more). This study suggests that early screening and identification can be beneficial to be incorporated in the management of depression in anticipation of future complications.

Keywords: Major Depressive Disorder, Metabolic Syndrome, Risk Factors, Smoking, Alcohol, Intake
Introduction

Metabolic syndrome, formerly known as Syndrome X, is a constellation of metabolic abnormalities including glucose intolerance (Type II diabetes, impaired glucose tolerance, or impaired fasting glycaemia), central obesity, dyslipidaemia and hypertension. The diagnosis of metabolic syndrome varies depending on the different definitions in popular use, as proposed by the International Diabetes Federation (IDF), National Cholesterol Education Program Adults Treatment Panel III (NCEP ATP III) and the World Health Organization (WHO). The prevalence of metabolic syndrome in Malaysia was 22.9 %, 16.5 % and 6.4 % according to the IDF, NCEP ATP III and modified WHO criteria respectively.

There are several risk factors that may contribute to the development of metabolic syndrome, such as gender, ethnicity, lifestyle factors as well as psychiatric illnesses. A local study has reported that males are more likely to have metabolic syndrome than females in Malaysia. The same study also showed that the prevalence of metabolic syndrome is highest amongst the Malays, followed by Indians and Chinese. Lifestyle risk factors such as smoking, alcohol intake, dietary pattern and physical activity have also been shown to be important factors associated with metabolic syndrome which are potentially modifiable.

Many other studies have shown that patients with severe mental illnesses such as schizophrenia and major depressive disorder (MDD) are at an increased risk of developing metabolic syndrome. Metabolic syndrome was found in 37.2 % of the psychiatric patients with either schizophrenia or mood disorders in Malaysia. Meanwhile, a Finnish study reported that metabolic syndrome had been diagnosed in 36.0 % of patients with MDD alone. This is definitely a cause of concern as MDD is the most commonly encountered psychiatric illness in primary care clinics in Malaysia. While it is well established that metabolic syndrome is highly prevalent among depressed patients, there has been no local studies to identify the factors contributing to this syndrome.

Therefore, this study aims to determine the prevalence of metabolic syndrome and its associated factors among patients with MDD attending the Psychiatric Clinic of a major tertiary hospital in Malaysia.

Methods

This was a cross-sectional study which was conducted in the Psychiatric Clinic of UKMMC from January 2011 till April 2011. The study population consisted of psychiatric patients who had been diagnosed with Major Depressive Disorder by trained psychiatrists based on the Diagnostic and Statistical Manual of Mental Disorders Version IV (DSM-IV).

A total of 278 patients between the ages of 18 to 65 years old who fulfilled the diagnosis of MDD were approached. Patients with other co-morbid psychiatric disorders such as anxiety and psychotic features, as well as patients with pregnancy and hypothyroidism were excluded from this study. The patients must also be in stable clinical condition during the study period. A total of 80 patients gave their consent to this study and eight patients were further excluded due to inadequate data.

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disorders such as anxiety and psychotic features, as well as patients with pregnancy and hypothyroidism were excluded from this study. The patients must also be in stable clinical condition during the study period. A total of 80 patients gave their consent to this study and eight patients were further excluded due to inadequate data.

The eligible patients were invited to participate in this study prior to their appointment at the Psychiatric Clinic, during which they were informed to fast for at least 8 hours for measurement of fasting blood glucose. The study was conducted as an interviewer-guided session whereby the patients were given a questionnaire which consisted of socio-demographic background, medical history, Beck Depression Inventory II (BDI-II), International Physical Activity Questionnaire (IPAQ) and 24-hour dietary recall.

The BDI-II is a 21-item self-report instrument questionnaire which is used to assess the existence and severity of symptoms of depression as listed in DSM-IV. It has been validated clinically for assessing depression in a Malaysian population. The answers are scored by a scale value from 0 to 3 and the cutoffs used are 0 – 13 (minimal depression), 14 – 19 (mild depression), 20 – 28 (moderate depression), and 29 – 63 (severe depression).

The IPAQ is a self-administered questionnaire which assesses the level of physical activities across four domains: leisure time, domestic and yard work, work-related physical activity and transport-related physical activity. The total amount of physical activity is quantified and categorized into low (1 – 7), moderate (8 – 14) and high (15 – 21) level of activities.

24-hour dietary recall is a self-administered questionnaire which is used to assess the dietary intake of participants in an average day. It is a quick and reliable method to determine the type and amount of food taken by a multiethnic population.

The patient’s waist circumference was taken at the midpoint between the superior iliac crest and costal margins during inspiration phase by using a measuring tape. The blood pressure was recorded twice and the average reading was taken. The fasting glucose and lipid levels were ascertained by venous blood samples which were drawn after an overnight fast of at least 8 hours and analyzed at the histopathology unit of UKMMC.

The diagnosis of metabolic syndrome was made based on the IDF criteria because of the availability of a waist circumference measurement which was specifically catered to the South Asian population.

According to IDF definition, for a person to be diagnosed with metabolic syndrome, they must have central obesity, which is defined as waist circumference of ≥ 90 cm in males and ≥ 80 cm in females; and any two of the four other risk factors: (1) raised triglyceride level: ≥ 150 mg/dL (1.71 mmol/L); (2) reduced HDL cholesterol: < 40 mg/dL (1.03 mmol/L) in males and < 50 mg/dL (1.29 mmol/L) in females; (3) raised blood pressure: systolic BP ≥ 130 or diastolic BP ≥ 85 mm Hg; and (4) raised fasting plasma glucose ≥ 100 mg/dL (5.6 mmol/L). The data were analyzed using the Statistical Package for Social Sciences, SPSS (SPSS, version 17). For quantitative data, Student’s T test was used for parametric analysis (age and work index) while Mann-Whitney U test was used for non-parametric analysis.
(dietary intake, sport index, leisure time index and total index). A non-parametric Chi-square test was performed on categorical data. For values of 5 or less in the cell, Chi-square test with Yates correction was performed. The significance level was set at 0.05.

Results

A total number of 72 outpatients with MDD participated in this study, of which 27 were diagnosed with metabolic syndrome based on the IDF criteria (37.5 %). The baseline characteristics of these patients were shown in Table 1.

Table 1. Baseline Weight and Metabolic Characteristics of the Participants

<table>
<thead>
<tr>
<th>Metabolic Syndrome (n = 27)</th>
<th>No Metabolic Syndrome (n = 45)</th>
<th>Total (n = 72)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Body Mass Index</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>29.6 ± 7.1 kg/m²</td>
<td>23.2 ± 3.1 kg/m²</td>
<td>25.6 ± 5.8 kg/m²</td>
</tr>
<tr>
<td><strong>Waist Circumference</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male (n = 24) 99.2 ± 10.5 cm</td>
<td>85.2 ± 8.9 cm</td>
<td>90.5 ± 11.6 cm</td>
</tr>
<tr>
<td>Female (n = 48) 93.7 ± 13.0 cm</td>
<td>79.1 ± 9.4 cm</td>
<td>84.6 ± 12.9 cm</td>
</tr>
<tr>
<td><strong>Blood Pressure</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Systolic BP 133.1 ± 14.9 mm Hg</td>
<td>124.7 ± 17.8 mm Hg</td>
<td>127.9 ± 17.2 mm Hg</td>
</tr>
<tr>
<td>Diastolic BP 81.6 ± 8.6 mm Hg</td>
<td>74.2 ± 12.1 mm Hg</td>
<td>77.0 ± 11.4 mm Hg</td>
</tr>
<tr>
<td><strong>Fasting Glucose</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.6 ± 1.6 mmol/L</td>
<td>5.0 ± 1.0 mmol/L</td>
<td>5.2 ± 1.3 mmol/L</td>
</tr>
<tr>
<td><strong>Triglyceride</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.1 ± 1.1 mmol/L</td>
<td>1.2 ± 0.7 mmol/L</td>
<td>1.6 ± 1.0 mmol/L</td>
</tr>
<tr>
<td><strong>HDL-cholesterol</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.2 ± 0.4 mmol/L</td>
<td>1.6 ± 0.4 mmol/L</td>
<td>1.4 ± 0.4 mmol/L</td>
</tr>
</tbody>
</table>

The associations between socio-demographic characteristics and metabolic syndrome were shown in Table 2. Race was significantly associated with metabolic syndrome (p = 0.043). The prevalence of metabolic syndrome was highest in Indians (70 %), followed by Malays (40 %) and Chinese (27 %). Indians were almost five times more likely to have metabolic syndrome compared to non-Indians (OR = 4.90, 95 % CI 1.15 – 20.96). The mean age of patients with metabolic syndrome was higher than those without metabolic syndrome although this is not statistically significant (p = 0.456). There was no difference in the gender distribution between those with and without metabolic syndrome (p = 1.000). No associations were found between metabolic syndrome and marital status as well as education level.
Table 2. Associations between Sociodemographic Characteristics and Metabolic Syndrome

<table>
<thead>
<tr>
<th></th>
<th>Metabolic Syndrome (n = 27)</th>
<th>No Metabolic Syndrome (n = 45)</th>
<th>Total (n = 72)</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td>47.19 ± 9.32</td>
<td>45.24 ± 11.34</td>
<td>45.97 ± 10.60</td>
<td>0.456</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>9 (37.5 %)</td>
<td>15 (62.5 %)</td>
<td>24 (100.0 %)</td>
<td>1.000</td>
</tr>
<tr>
<td>Female</td>
<td>18 (37.5 %)</td>
<td>30 (62.5 %)</td>
<td>48 (100.0 %)</td>
<td></td>
</tr>
<tr>
<td><strong>Race</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Malay</td>
<td>10 (40.0 %)</td>
<td>15 (60.0 %)</td>
<td>25 (100.0 %)</td>
<td>0.043*</td>
</tr>
<tr>
<td>Chinese</td>
<td>10 (27.0 %)</td>
<td>27 (73.0 %)</td>
<td>37 (100.0 %)</td>
<td></td>
</tr>
<tr>
<td>Indian</td>
<td>7 (70.0 %)</td>
<td>3 (30.0 %)</td>
<td>10 (100.0 %)</td>
<td></td>
</tr>
<tr>
<td><strong>Marital Status</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>5 (26.3 %)</td>
<td>14 (73.7 %)</td>
<td>19 (100.0 %)</td>
<td>0.166</td>
</tr>
<tr>
<td>Married</td>
<td>22 (41.5 %)</td>
<td>31 (58.5 %)</td>
<td>53 (100.0 %)</td>
<td></td>
</tr>
<tr>
<td><strong>Education Level</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary</td>
<td>5 (45.5 %)</td>
<td>6 (54.5 %)</td>
<td>11 (100.0 %)</td>
<td>0.217</td>
</tr>
<tr>
<td>Secondary</td>
<td>15 (45.5 %)</td>
<td>18 (54.5 %)</td>
<td>33 (100.0 %)</td>
<td></td>
</tr>
<tr>
<td>Tertiary</td>
<td>7 (25.0 %)</td>
<td>21 (75.0 %)</td>
<td>28 (100.0 %)</td>
<td></td>
</tr>
</tbody>
</table>

The clinical factors which were significantly associated with metabolic syndrome were duration of depression (p = 0.043) and pre-existing hyperlipidaemia (p = 0.032), as illustrated in Table 3. Depressed patients who had suffered the illness for more than 10 years were three times more likely to develop metabolic syndrome than those with shorter illness duration (OR = 3.25, 95 % CI 1.00 – 10.52). Metabolic syndrome was also three times more likely to be diagnosed in patients with pre-existing hyperlipidaemia (OR = 3.18, 95 % CI 1.08 – 9.39). However, there was no association between the severity of depression and metabolic syndrome (p = 0.161).

Table 3. Association between Clinical Factors and Metabolic Syndrome

<table>
<thead>
<tr>
<th></th>
<th>Metabolic Syndrome (n = 27)</th>
<th>No Metabolic Syndrome (n = 45)</th>
<th>Total (n = 72)</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Duration of Depression</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥ 10 years</td>
<td>9 (60.0 %)</td>
<td>6 (40.0 %)</td>
<td>15 (100.0 %)</td>
<td>0.043*</td>
</tr>
</tbody>
</table>
< 10 years 18 (31.6 %) 39 (68.4 %) 57 (100.0 %)

**Severity of Depression (BDI II)**
- Mild – Severe 11 (29.7 %) 26 (70.3 %) 37 (100.0 %) 0.161
- Minimal Symptoms 16 (45.7 %) 19 (54.3 %) 35 (100.0 %)

**Pre-existing Hypertension**
- Yes 8 (47.1 %) 9 (52.9 %) 17 (100.0 %) 0.352
- No 19 (34.5 %) 36 (65.5 %) 55 (100.0 %)

**Pre-existing Diabetes Mellitus**
- Yes 3 (75.0 %) 1 (25.0 %) 4 (100.0 %) 0.288
- No 24 (35.3 %) 44 (64.7 %) 68 (100.0 %)

**Pre-existing Hyperlipidaemia**
- Yes 11 (57.9 %) 8 (42.1 %) 19 (100.0 %) 0.032*
- No 16 (30.2 %) 37 (69.8 %) 53 (100.0 %)

There were no significant associations between the various lifestyle factors and metabolic syndrome in our study, which included smoking (p = 0.720), alcohol intake (p = 0.878), dietary intake (p = 0.671) and physical activity (p = 0.762) (Table 4).

### Table 4. Associations between Lifestyle Risk Factors and Metabolic Syndrome

<table>
<thead>
<tr>
<th></th>
<th>Metabolic Syndrome (n = 27)</th>
<th>No Metabolic Syndrome (n = 45)</th>
<th>Total (n = 72)</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Smoking</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>7 (41.2 %)</td>
<td>10 (58.8 %)</td>
<td>17 (100.0 %)</td>
<td>0.720</td>
</tr>
<tr>
<td>No</td>
<td>20 (36.4 %)</td>
<td>35 (63.6 %)</td>
<td>55 (100.0 %)</td>
<td></td>
</tr>
<tr>
<td><strong>Alcohol Intake</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>5 (35.7 %)</td>
<td>9 (64.3 %)</td>
<td>14 (100.0 %)</td>
<td>0.878</td>
</tr>
<tr>
<td>No</td>
<td>22 (37.9 %)</td>
<td>36 (62.1 %)</td>
<td>58 (100.0 %)</td>
<td></td>
</tr>
<tr>
<td><strong>Dietary Intake</strong></td>
<td>1608 ± 678</td>
<td>1536 ± 668</td>
<td>1563 ± 668</td>
<td>0.671</td>
</tr>
<tr>
<td>(kCal)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Physical Activity (IPAQ)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Work Index</td>
<td>2.9 ± 0.6</td>
<td>2.8 ± 0.7</td>
<td>2.8 ± 0.7</td>
<td>0.594</td>
</tr>
<tr>
<td>Sport Index</td>
<td>1.9 ± 2.0</td>
<td>1.4 ± 0.7</td>
<td>1.6 ± 1.3</td>
<td>0.505</td>
</tr>
<tr>
<td>Leisure Time Index</td>
<td>2.3 ± 0.5</td>
<td>2.5 ± 0.6</td>
<td>2.4 ± 0.6</td>
<td>0.177</td>
</tr>
<tr>
<td>Total Index</td>
<td>7.1 ± 2.3</td>
<td>6.7 ± 1.4</td>
<td>6.9 ± 1.8</td>
<td>0.762</td>
</tr>
</tbody>
</table>
Table 5 showed the different types of antidepressant medications prescribed to the study sample and their associations with metabolic syndrome. The most prescribed antidepressants among the participants were selective serotonin reuptake inhibitors (SSRIs), such as escitalopram and fluvoxamine. Other medications included tricyclic antidepressants, venlafaxine, mirtazapine and agomelatine. There were no significant associations between the type of medication with the presence of metabolic syndrome (p = 0.242 to 1.000).

Table 5. Associations between Antidepressant Medications and Metabolic Syndrome

<table>
<thead>
<tr>
<th></th>
<th>Metabolic Syndrome (n = 27)</th>
<th>No Metabolic Syndrome (n = 45)</th>
<th>Total (n = 72)</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Escitalopram</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>11 (35.5 %)</td>
<td>20 (64.5 %)</td>
<td>31 (100.0 %)</td>
<td>0.759</td>
</tr>
<tr>
<td>No</td>
<td>16 (39.0 %)</td>
<td>25 (61.0 %)</td>
<td>41 (100.0 %)</td>
<td></td>
</tr>
<tr>
<td>Fluvoxamine</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>8 (50.0 %)</td>
<td>8 (50.0 %)</td>
<td>16 (100.0 %)</td>
<td>0.242</td>
</tr>
<tr>
<td>No</td>
<td>19 (33.9 %)</td>
<td>37 (66.1 %)</td>
<td>56 (100.0 %)</td>
<td></td>
</tr>
<tr>
<td>Fluoxetine</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>2 (40.0 %)</td>
<td>3 (60.0 %)</td>
<td>5 (100.0 %)</td>
<td>1.000</td>
</tr>
<tr>
<td>No</td>
<td>25 (37.3 %)</td>
<td>42 (62.7 %)</td>
<td>67 (100.0 %)</td>
<td></td>
</tr>
<tr>
<td>Sertraline</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>0 (0.0 %)</td>
<td>4 (100.0 %)</td>
<td>4 (100.0 %)</td>
<td>0.288</td>
</tr>
<tr>
<td>No</td>
<td>27 (39.7 %)</td>
<td>41 (60.3 %)</td>
<td>68 (100.0 %)</td>
<td></td>
</tr>
<tr>
<td>Paroxetine</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>0 (0.0 %)</td>
<td>4 (100.0 %)</td>
<td>4 (100.0 %)</td>
<td>1.000</td>
</tr>
<tr>
<td>No</td>
<td>27 (39.7 %)</td>
<td>41 (60.3 %)</td>
<td>68 (100.0 %)</td>
<td></td>
</tr>
<tr>
<td>Venlafaxine</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>0 (0.0 %)</td>
<td>3 (100.0 %)</td>
<td>3 (100.0 %)</td>
<td>0.446</td>
</tr>
<tr>
<td>No</td>
<td>27 (39.1 %)</td>
<td>42 (60.9 %)</td>
<td>69 (100.0 %)</td>
<td></td>
</tr>
<tr>
<td>Amitryptiline</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>1 (100.0 %)</td>
<td>0 (0.0 %)</td>
<td>1 (100.0 %)</td>
<td>0.795</td>
</tr>
<tr>
<td>No</td>
<td>26 (36.6 %)</td>
<td>45 (63.4 %)</td>
<td>71 (100.0 %)</td>
<td></td>
</tr>
<tr>
<td>Mianserin</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>1 (100.0 %)</td>
<td>0 (0.0 %)</td>
<td>1 (100.0 %)</td>
<td>0.795</td>
</tr>
<tr>
<td>No</td>
<td>26 (36.6 %)</td>
<td>45 (63.4 %)</td>
<td>71 (100.0 %)</td>
<td></td>
</tr>
</tbody>
</table>
### Discussion

From this study, the prevalence of metabolic syndrome was 37.5% among outpatients with major depressive disorder in UKMMC based on the International Diabetes Federation (IDF) definition. Therefore, metabolic syndrome was more prevalent among patients with depression compared to the general population. This high prevalence of metabolic syndrome was consistent with a previous local study in the same setting but include patients with schizophrenia and bipolar disorders in addition to major depression. Similarly, this was further supported by another study conducted by Heiskanen et al among patients with major depressive disorder in Finland.

This study had shown that there was a significant association between race and metabolic syndrome. There was almost a five times risk for an Indian patient with MDD to be diagnosed with metabolic syndrome than non-Indians. The results of this study replicated those of other studies where it was shown that there was a greater risk of metabolic syndrome among different ethnicities, especially in Indians and Malays. In fact, many studies had proven that Indians were genetically predisposed to diabetes mellitus, a component of metabolic syndrome, and its complications. Cultural differences were also important, especially with regards to the diversity of the dietary patterns among these patients.

Besides race, the duration of depression was also significantly associated with metabolic syndrome. Patients who had suffered from MDD for 10 years or more are at higher risk of metabolic syndrome compared to their counterparts who had a lesser duration of illness. This was consistent with the proven association between the duration of MDD with the onset of Type II diabetes mellitus in a meta-analysis conducted by Knol et al.

Meanwhile, another study chose to focus more on the number of depressive episodes rather than the duration, concluding that recurrent depressive episodes (two or more episodes) also increased the risk of metabolic syndrome in the depressed female population. This study built on a theory that 10 years was sufficient for the development of at least two depressive episodes, in which the results of this study would be consistent with that done by Edie et al.

It was also found that depressed patients with pre-existing hyperlipidaemia were three times more likely to have metabolic syndrome. As a component of metabolic syndrome, hyperlipidaemia could serve as an early warning sign in depressed patients, so that their managing team would more
proactive in taking the appropriate preventive measures.

Other non-modifiable risk factors such as gender and age were proven to be independent from metabolic syndrome based on our study. Although it had been reported that there was a strong association between depression and metabolic syndrome in women\(^2\), there was no association found in this study. Similarly, there was no relationship between age and metabolic syndrome in our study population. These observations could be explained by the homogeneity in the gender and age of our participants.

Interestingly, there were no associations between metabolic syndrome and various lifestyle risk factors, such as smoking, alcohol consumption, physical activity and dietary intake. Although other studies had shown that higher level of physical activity lowered the odds of metabolic syndrome, these studies were done in the general population who were not burdened with psychiatric illnesses\(^2\). In comparison, our study found that the depressed subjects had low levels of physical activity, no matter with or without metabolic syndrome, which was accounted for by the low level of variability in our data. Therefore, it could be postulated that depression might have caused them to be anhedonic with low energy levels. Similarly, depression in itself could also have altered the appetite and dietary pattern among the participants of our study.

The clinical factors studied in this survey were the severity of depression and types of antidepressants which had been prescribed. Almost 30% of the patients with metabolic syndrome were symptomatic for depression (mild, moderate or severe symptoms); however, there was no association between its severity with metabolic syndrome. Since the symptoms might change with the course of depression, we were unable to determine the influence of severity of depression on metabolic syndrome.

From this study, most of the participants were taking selective serotonin reuptake inhibitors (SSRIs) compared to other medications such as tricyclic antidepressants, venlafaxine, mirtazapine and agomelatine. Although previous studies had shown that many antidepressants had certain side effects including weight gain and diabetes, none of the SSRIs was found to give rise to metabolic syndrome\(^3,4\).

The limitations of this study were a high attrition rate (74%) and small sample size. Out of 278 patients who fit the inclusion criteria, only 72 patients provided sufficient data to participate in the study. Many patients were not contactable, while more than half of the original number simply refused to join the study as they were not interested. This high attrition rate was due to the low awareness of metabolic syndrome among depressed patients, many of whom were indifferent and apathetic towards the condition of their health. Hence, the small number of subjects might have caused some of the results to be insignificant as there was not much variability in the data especially for dietary habit and physical activity.

Besides that, the findings of this study were also affected by information and recall biases especially in the recording of dietary intake. In this study, 24-hour dietary recall was used to gauge the dietary intake of the patients. However, based on a study done by Rosell et al, underreporting influenced the association of metabolic syndrome and dietary factors to a great extent\(^3\). Therefore, interpretation of data must be done while keeping these biases in mind.
It is recommended that this study to be reproduced as a multi-centred study with a larger sample size to better represent the population. A choice of prospective study would be best to examine the causation of the factors of Metabolic Syndrome in patients with Major Depressive Disorder on the long run. As the size of this study is rather small, certain clinical factors such as the antidepressants that the patients were prescribed could not be analysed accurately. With the method of choice stated above, these factors can be studied with more focus.

The investigation of the linkage between metabolic syndrome and depression had been done worldwide but to the best of knowledge, this was the first study done in Malaysia to assess evidence from a non-randomized sample of population with Major Depressive Disorder to determine the prevalence of metabolic syndrome as well as its associated factors.

Understanding the factors associated with the metabolic syndrome is crucial to establish a proper and valid prevention given that the prevalence of patients with MDD with metabolic syndrome is higher than those without psychiatric illnesses. It has been proposed that depressed individuals are more often involved in deleterious lifestyle behaviours than non-depressed ones; such as cigarette smoking and alcohol intake, unhealthy diet intake, and lack of physical activity. These behaviours may lead to development of metabolic syndrome and subsequently to cardiovascular disease and Type 2 diabetes mellitus. Although no concrete relationship has been found between these lifestyle factors with metabolic syndrome in our study, it underlines the fact that depression still remains the biggest challenge which needs to be tackled in order to prevent metabolic syndrome.

Conclusions

The findings of this study have illustrated that the prevalence of metabolic syndrome with Major Depressive Disorder is high particularly among Indian patients and those who have suffered the illness for a longer duration. Thus, this study suggests that timing is crucial in the management of metabolic syndrome in depressed patients. It highlights the importance of prevention and screening of the metabolic abnormalities especially in long standing depressed patients as this is a major public health concern with high mortality and morbidity complications.

Routine screening for metabolic syndrome in depressed patients should be advocated and psychiatrists should be made aware of the co-morbid physical illnesses to better manage their patients. A multi-disciplinary approach should be taken, whereby psychiatrists should consider working with physicians or endocrinologists for early prevention of metabolic syndrome. Thus, identification and management of depression should therefore precede or accompany other measures in the management of metabolic syndrome.

References


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Email: nikruzyanei@yahoo.com
Factorial Analysis of The Eating Attitude Test (EAT-40) among a group of Malaysian University Students

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Abstract
Background: Eating disorders are a group of mental health concerns characterized by disturbance in eating behaviour that include, anorexia, bulimia, binge eating disorder, and other types of disordered eating. Adolescents are becoming increasingly vulnerable to eating disorders. The Eating Disorder Attitude Test (EAT-40) is a widely used screening instrument for detecting eating disorders. Several authors have translated the EAT-40 in various languages and validated the scale. The objective of the study included determining the factor structure of EAT-40 and to find the reliability. Method: 217 undergraduate university students in Malaysia were administered the EAT-40. In addition, they were also administered the Rosenberg’s Self Esteem scale to study the correlates of EAT-40. Results: The mean age of students was 22 years. The factor analysis of EAT-40 revealed a 34 item EAT model, with four subscales, ‘Dieting Behaviour’, ‘Oral Control’, ‘Food Preoccupation’ and ‘Body Image’. The short form is composed of 34 items and shows good internal consistency = 0.799. Conclusion: It may be established that the EAT-34 shows an unidimensional structure with good internal consistency even though some items needs to be revised.

Keywords: Eating attitude test, Self-esteem, Factor Analysis, Reliability

Introduction
Many adolescents become preoccupied with their body weight and attempt to achieve the ideal physique because of social and cultural norms, reinforced by medic messages emphasizing a thin and physically fit body. The alarming increase in the number of teenagers with eating disorders underscores the need to promote research on the underlying causes, and to identify high-risk subpopulations in need of effective targeted treatment. Eating disorders have attracted great interest in recent years as a consequence of the serious nature of their symptoms, their resilience to treatment and the high chronicity and mortality involved. Detecting cases of eating disorders among large population is of interest to clinicians and health planners, as well as epidemiologists.
The Eating Attitude Test (EAT) has been used as a screening instrument for detecting previously undiagnosed cases of anorexia nervosa in population at high risk for the disorder. The Eating Attitude Test questionnaire has been shown to be a valid objective and economical index of behaviour and attitude frequently observed in anorexia nervosa and it has proved useful in identifying eating disturbance in non-clinical sample. EAT is the most used scale to measure eating disorders in a variety of cultures.

The Eating Attitude Test (EAT), developed by Garner and Garfinkel, is a 40-item, self-rated scale for measuring the behaviours and attitudes characteristic of anorexia nervosa. Later, Garner et al factor analysed the original version of EAT-40 for the sample of 160 anorexia nervosa patients. The 14 items that did not load on the three factors were eliminated resulting in the EAT-26. The EAT-26 maintains as robust a correlation with clinical and psychometric variables as the original scale, indicating that the 14 items eliminated from the EAT-40 are redundant and do not increase the instrument’s predictive capacities.

Several authors have translated the EAT-26 in various languages and validated the scale. There are few literatures available on the validation of EAT-40. Although the EAT is a widely used measure in a number of psychology disciplines, researchers should not assume validity holds from one population to another. There are a number of options available to validate a scale with a new population, one of them is to use a previously validated inventory on the new population and assume validity.

Most self-report scales do not assess the diagnostic criteria for eating disorders. Scales such as the Eating Attitude Test developed Garner do not yield DSM-IV diagnosis. Although EAT-40 may not be useful in making a diagnosis it may still be used as a screening instrument. The objective of this study is to validate the EAT-40 based on a non-clinical sample of university students to explore the psychometric properties (reliability) of the scale. The argument for investigating the EAT-40 was to see whether it can measure individuals at risk in a non-clinical population. Therefore, it was justified to use this scale on university students who were presumed to be normal.

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.

Sample: The EAT-40 was distributed in a psychology class and was collected back upon completion. 250 female undergraduate students were asked to complete the EAT-40, only 217 EAT-40 were complete in all respects. (Completion rate=87%). The mean age of students was 22 years. 43% were Malays, 40% Chinese and 17% other ethnic group including Indians.

Instrumentation

Eating Attitude Test (EAT-40)

The Eating Attitude Test (EAT-40) was developed by Garner and Garfinkel. It is a 40 item multidimensional self-report scale designed to assess the attitudes, behavior, and traits present in eating disorders particularly anorexia nervosa and bulimia.
nervosa. The average time to complete the scale is 10 minutes. Garner and Garfinkel reported an alpha coefficient of 0.94 to demonstrate internal consistency. Responses are rated on a 1 (Always) to 6 (Never) spectrum. Items 1,18,19,23 and 39 are scored: 6=3 points; 5=2 points; 4=1 point; 3, 2, or 1=0 points. The remaining items are scored: 1 = 2 points; 2=2 points; 3=1 point, and 4, 5, or 6=0 points. Scores for each item differ from one another. Total score is the sum of each item. A score greater than 30 is considered to be an indicator anorectic disorder.

Correlates of Eating Attitude Test scores

Self-esteem. Rosenberg’s Self Esteem scale was used to assess self-esteem. Respondents completed the scale by indicating their agreement with each of the 10 items on a 4 point scale. (3= ‘strongly agree’, 0= ‘strongly disagree’). Five items in this scale are in reverse valence. A total Self-esteem score was obtained by summing the 10 responses. The score ranges from 0-30. Scores between 15 and 25 are within normal range. In this study, it was found the alpha coefficient was 0.88, hence indicating an internally reliable scale.

Analysis

SPSS version 17 was used to analyse the data. Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy suggests that pattern of correlation are relatively compact and so factor analysis should yield distinct and reliable factors. KMO value is 0.67, which is considered mediocre.

Results of Bartlett’s test of sphericity shows $\chi^2=2673.65$ (df=66 p<0.000). In this study, the sample inter correlation matrix did not come from a population in which the inter correlation matrix is an identical matrix. There was no correlation error among the variables.

Exploratory factor analysis, with varimax rotation, was applied to the data. Eigen values above 1.00 were used. The criterion for factor loading was set at $\geq 0.30$ to suppress absolute value less than 0.30. This is similar to studies done by Elal et al who retained items $\geq 0.30$.

Principle component analysis was used as extraction method. Number of factors to extract was four. In a similar study Koslowsky et al extracted four factors on EAT-26. Factor loadings and screen plot were examined. One good method of screening for efficient items is to run an exploratory factor analysis on all the items to eliminate those variables that failed to show high correlation.

Cronbach’s alpha was used to find the internal consistency of the scale. Cronbach's alpha is an index of reliability associated with the variation accounted for by the true score of the "underlying construct." Construct is the hypothetical variable that is being measured. The higher the score, the more reliable the generated scale is. Nunnaly has indicated 0.7 to be an acceptable reliability coefficient.

Results

Eating Attitude Test (EAT-40)

In this study the least score on the EAT-40 was 3 and the maximum score was 39. ($\bar{x} = 18.28$, SD=9.40).

Factor structure and reliability

The overall results from the Exploratory Factor Analysis are presented in Table 1. The EAT- 40 was factor analysed, Principal
Component Analysis was used to explore factor structures. The four factor solution accounted for 33.16% of the total variance. It was found that the loadings ranged from 0.31 to 0.66. Majority of the loading was >0.40. Only one item (35) showed poor loading (0.315). Varimax rotation was applied to the data to obtain four subscales solutions.

The first subscale grouped the following items: No. 2,3,4,5,6,7,8,9,10,11,13,15,16 & 32. The 14 items fitted under the first subscale named “Dieting Behaviour”. Variance explained 14.40%. The reliability $\alpha=0.76$.

The second subscale grouped the following items: No. 17, 22, 25, 27, 30, 37 & 38. The 7 items fitted under the second subscale named “Oral control”. Variance explained 7.07%. The reliability $\alpha=0.63$.

The third subscale grouped the following items: No.1, 18, 19,28,29,31,33,35,36 & 40. The 10 items fitted under the third subscale named “Food Preoccupation”. Variance explained 5.91%. The reliability $\alpha=0.60$.

The fourth subscale grouped the following items: No.12, 24 & 26. The 3 items fitted under the fourth subscale named “Body Image”. Variance explained 5.78%. The reliability $\alpha=0.60$.

17 items 1,2,5,8,12,15,16,22,24,25,26,28,29,32,36,37 & 38 showed good loading ranging between 0.50 to 0.66. About 6 items, 14,20,21,23,34 and 39 failed to load. The internal consistency of first subscale (Factor 1) was higher compared to other factors.

### Table 1. Exploratory Factor Analysis

<table>
<thead>
<tr>
<th>ITEM</th>
<th>Dieting Behaviour</th>
<th>Oral control</th>
<th>Food Preoccupation</th>
<th>Body Image</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Like eating with other people</td>
<td></td>
<td></td>
<td></td>
<td>0.533</td>
</tr>
<tr>
<td>2. Prepare foods for others but do not eat what I cook.</td>
<td></td>
<td>0.578</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Become anxious prior to eating.</td>
<td></td>
<td>0.471</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Am terrified about being overweight.</td>
<td></td>
<td>0.457</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Avoid eating when I am hungry.</td>
<td></td>
<td>0.551</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Find myself preoccupied with food.</td>
<td></td>
<td>0.443</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Have gone on eating binges where I feel that I may not be able to stop.</td>
<td></td>
<td>0.450</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Cut my food into small pieces.</td>
<td></td>
<td>0.587</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Aware of the calorie content of foods that I eat.</td>
<td></td>
<td>0.404</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Particularly avoid food with a high carbohydrate content (i.e. bread, rice, potatoes, etc.</td>
<td></td>
<td>0.437</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Feel boated after meals.</td>
<td></td>
<td>0.425</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Feel that others would prefer if I ate more.</td>
<td></td>
<td></td>
<td></td>
<td>0.587</td>
</tr>
</tbody>
</table>
As seen in Table 2 the Cronbach’s alpha coefficient was 0.799. If items with low homogeneity index (HI) were to be deleted it is presumed that there would be substantial increase in alpha.

Table 2. Item Analysis of EAT-40

<table>
<thead>
<tr>
<th>ITEMS</th>
<th>HI</th>
<th>Alpha if item is deleted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vomit after I have eaten.</td>
<td>0.473</td>
<td></td>
</tr>
<tr>
<td>Feel extremely guilty after eating.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Am preoccupied with a desire to be thinner.</td>
<td>0.514</td>
<td></td>
</tr>
<tr>
<td>Exercise strenuously to burn off calories.</td>
<td>0.554</td>
<td></td>
</tr>
<tr>
<td>Weigh myself several times a day.</td>
<td>0.405</td>
<td></td>
</tr>
<tr>
<td>Like my clothes to fit tightly.</td>
<td>0.353</td>
<td></td>
</tr>
<tr>
<td>Enjoy eating meat.</td>
<td>0.382</td>
<td></td>
</tr>
<tr>
<td>Wake up early in the morning.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eat the same foods day after day.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Think about burning up calories when I exercise.</td>
<td>0.509</td>
<td></td>
</tr>
<tr>
<td>Have regular menstrual periods.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other people think that I am too thin.</td>
<td>0.668</td>
<td></td>
</tr>
<tr>
<td>Am preoccupied with the thought of having fat on my body.</td>
<td>0.536</td>
<td></td>
</tr>
<tr>
<td>Take longer than others to eat my meals.</td>
<td>0.582</td>
<td></td>
</tr>
<tr>
<td>Enjoy eating at restaurants.</td>
<td>0.348</td>
<td></td>
</tr>
<tr>
<td>Take laxatives.</td>
<td>0.505</td>
<td></td>
</tr>
<tr>
<td>Avoid foods with sugar in them.</td>
<td>0.613</td>
<td></td>
</tr>
<tr>
<td>Eat diet foods.</td>
<td>0.431</td>
<td></td>
</tr>
<tr>
<td>Feel that food controls my life.</td>
<td>0.489</td>
<td></td>
</tr>
<tr>
<td>Display self-control around food.</td>
<td>0.568</td>
<td></td>
</tr>
<tr>
<td>Feel that others pressure me to eat.</td>
<td>0.399</td>
<td></td>
</tr>
<tr>
<td>Give too much time and thought to food.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Suffer from constipation.</td>
<td>0.315</td>
<td></td>
</tr>
<tr>
<td>Feel uncomfortable after eating sweets.</td>
<td>0.602</td>
<td></td>
</tr>
<tr>
<td>Engage in dieting behavior.</td>
<td>0.635</td>
<td></td>
</tr>
<tr>
<td>Like my stomach to be empty.</td>
<td>0.605</td>
<td></td>
</tr>
<tr>
<td>Enjoy trying new rich foods.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have the impulse to vomit after meals.</td>
<td>0.456</td>
<td></td>
</tr>
</tbody>
</table>
Homogeneity indices was greater than 0.30, except for items 4, 6, 8, 9, 11, 12, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28 and 39. In particular items 18, 21 and 24 presented a low homogeneity index.

<table>
<thead>
<tr>
<th>Item</th>
<th>Homogeneity Index 1</th>
<th>Homogeneity Index 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>0.387</td>
<td>0.791</td>
</tr>
<tr>
<td>3</td>
<td>0.470</td>
<td>0.788</td>
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<tr>
<td>4</td>
<td>0.266</td>
<td>0.795</td>
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<tr>
<td>5</td>
<td>0.392</td>
<td>0.792</td>
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<tr>
<td>6</td>
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<td>0.796</td>
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<tr>
<td>7</td>
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<td>8</td>
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<tr>
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</tr>
<tr>
<td>40</td>
<td>0.367</td>
<td>0.793</td>
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</table>
Correlates

It was intended to see whether EAT-34 correlates with other variables. Inverse correlation was found between EAT-36 and self-esteem. \( \text{cor}=-0.38; \ p<0.01 \).

Discussion

Originally designed to diagnose anorexia nervosa, the Eating Attitude Test has recently been applied to nonclinical populations also\(^1\). In this study the least score on the EAT-40 was 3 and the maximum score was 39. \( \bar{x} = 18.28, \ SD=9.40 \).

Although the EAT is a widely used measure in a number of psychology disciplines, researchers should not assume validity holds from one population to another\(^2\). In this study, the EAT-40 was categorized into four sub scales;

**Factor 1:** Dieting Behaviour: ‘Dieting behaviour’ has 14 items loaded. ‘Dieting behaviour’ is related to an avoidance of food and a preoccupation with being thinner\(^3\).

**Factor 2:** Oral control: ‘Oral control’ has 7 items loaded. ‘Oral control’ relates to self-control of eating and the perceived pressure from others to gain weight\(^3\).

**Factor 3:** Food Preoccupation: ‘Food Preoccupation’ has 10 items loaded. ‘Food Preoccupation’ consists of items reflecting thoughts about food as well as those indicating bulimia\(^3\).

**Factor 4:** Body image: ‘Body image’ has 3 items loaded. ‘Body image’ refers to physical appearance of the individual\(^4\).

These subscales emerged from exploratory factor analysis, grouping the 40 items, according to their respective content. The total variance explained was 33.16%. In all, six items failed to load. In a similar study done by Garner et al\(^5\) three factors were extracted accounting for 40.2% of the variance. Fourteen items did not load on any of the factors. The elimination of 14 items resulted in the new 26-item scale. In this study, four items namely 20, 21, 23 and 34 were not loaded similar to the study done by Garner et al\(^5\).

Lane Helen\(^6\) obtained a four factor solution from Eat-26 however; the numbers of items were reduced to 21 items which showed promising validity coefficients. Pereira\(^7\) reported the Portuguese version of EAT 25 which showed good internal consistency.

Thus, the EAT-40 ended up with EAT-34 items instead of EAT-40 as six items failed to load. The variance explained by first sub scale was 14.40%, second subscale was 7.07%, third subscale was 5.91%, and fourth subscale was 5.91%. Total variance explained was 33.16%.

EAT-34 can also be used to find the relationship between other variables such as self-esteem. Rosenberg’s\(^8\) Self-esteem scale was used in this study to see whether the EAT-34 can be correlated with other scales. It was found that there exists an inverse and low correlation between the two variables self-esteem and EAT-34, eating disorders. \( \text{cor}=-0.38; \ p<0.01 \). Concurrent validity is demonstrated where a test correlates well with a measure that has previously been validated\(^9\). The alpha coefficient was 0.88 for Rosenberg’s\(^10\) Self-esteem scale. The EAT-34 shows good concurrent validity.

The main question that arises now is whether the factorial validity of the EAT-34 comprised as a single factor or three correlated factors as found in the original
validation study. Graner et al. acknowledged that factor analysis results should be treated cautiously. It could be argued that the factor ‘bulimia and food preoccupation’ assesses two highly related constructs. Bulimics are likely to have preoccupation with food, and thus the two constructs could correlate. However, a preoccupation with food is not necessarily an indicator of bulimia. The possibility that bulimia and food pre-occupation represent independent factors warrants further investigation.

Another point that needs to be reviewed is the cut-off point. Garner and Garfinkel suggested that a score of 30 or higher has been identified as a rough cut off for anorectic eating concerns. Vetrone et al. found that for EAT-40 at cut-off point of 30 the sensitivity of the questionnaire is very low and lead to a high rate of false negative which might lead to a significant underestimation of the prevalence of eating disorders. Study done by Nunes et al. reported similar problems with EAT-26, when a cut off score of 20 is used to identify Anorexia or Bulimia Nervosa.

In this study, the procedure output has an overall alpha of 0.799 in the full sample is good considering that 0.70 is the cut-off value for being acceptable. The Cronbach’s alpha coefficient increased slightly (α=0.820) if items with low homogeneity (items 18, 21 and 24) were deleted. Several items of EAT-40 should be revised in view of its low homogeneity index and factorial loadings.

There are potential limitations as well as obvious advantages in this study. Some of the limitations include, the purposive sample and not random sample was chosen because there was a need for young adults, where the prevalence of eating disorder is commonly detected. Difficulty in generalizing the findings because of the fact that the sample examined was not from the general population. The sample size was small and no comparison was made with anorexia patients. The advantages include the large EAT-40 has been shortened to 34 items decreasing the time to complete the scale. The validity of the scale was found to be good. EAT-34 can also be used to find correlation between other variables.

The Eating Attitude Test faces many challenges and cannot be used to make a diagnosis of eating disorder however; it can be used as a screening instrument. Becker et al. reviewed literature relevant to challenges in clinical ascertainment of cognitively-based diagnostic criteria of anorexia nervosa (AN) and bulimia nervosa (BN) they examined whether revision might enhance the clinical utility. They found that the literature supports several reasons that individuals with an eating disorder may not endorse cognitive symptoms, despite their presence. These include limited insight, minimization, or denial, as well as intentional concealment related to perceived stigma, social desirability, or investment in maintaining behavioural symptoms. The factor structure of the scale remains controversial. Confirmatory Factor Analysis done by Ocker et al. confirmed poor fits for both the three and four factor models.

**Conclusion**

Based on loading factor score ≥ 0.30 the EAT-40 ended up with EAT-34 items instead of EAT-40 as six items failed to load. The best solution in this study consisted of four factors based on 34 items. It may be established that the EAT shows an unidimensional structure with good internal consistency even though some items needs to be revised.
It is suggested further validation on EAT-34 need to be done on Malaysian population to check the homogeneity of the items and the reliability. The scale may also be tested among clinical and non-clinical population to study the discriminant capacity.

Declaration of interest and funding

There is no conflict of interest that could be perceived as prejudicing the impartiality of the study reported. This is a self-funded study.

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Coping Styles among Parents of Physically Handicapped Children in Special School, Karachi, Pakistan

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Abstract

Objective: In order to access the impact of a handicapped child in the family, the study was designed to examine and compare the level of stress and coping strategies among parents of physically challenged and normal children.

Method: 60 parents (either father or mother) of school going children (30 in each group, namely parents of physically challenged and normal children) were taken for the study. Wong stress appraisal and peacock measure was used to examine their level of stress whereas Folkman and Lazarus ways of coping questionnaire was used to assess coping strategies adopted by the two groups of parents. Results: Results showed that the level of stress among parents of physically challenged children was much higher and significantly differed with their normal counterparts. The two groups also differed significantly in terms of their coping strategies where parents of normal children were much better than the parents of physically challenged group. There were differences between the scores of parents of physically challenged children and that of normal children as the mean scores for the two groups of parents were found to be 93.4 and 149.3 respectively. Conclusion: The findings clearly indicated that the stress coping strategies of parents of normal children were certainly better than the parents of physically challenged children.

Keywords: Stress, Coping Strategies, Physical Handicapped

Introduction

The birth of any child can have a significant effect on the dynamics of the family. Parents and other children in the family must undergo a variety of changes to adapt to the pressure of a new member. The effect on the family of the birth of a disabled child can be even more profound. The physically challenged children are frequently characterized by extremes of behaviors, which in some cases influence the interactions they have with parents and siblings. The extra care and special accommodations are required by them.

Families of physically challenged children probably vary in their behavior, social attitude and family relationships as
compared to families who do not have disabled children. Family first tries to become aware of the problem of children, recognize it, seek to find out the cause of the problem and then search for rectification. Though the presence of a physically challenged child need not create a family crisis, the stigma of disability imposed by the society can be offending to the parents and the family. Guilt, Denial, projection of blame, grief, withdrawal, rejection and acceptance are usual parental reactions.

Moelsae and Moelsae \(^1\) studied the defenses of family members to observe the reactions of the family when faced with a dysfunction in one of its members and found that the birth of a disabled child interrupted the normal life cycle of the family, leading to a crisis. The first reaction in the parents was most often denial, but ultimately adaptation was demonstrated.

Today there is a growing trend in the mental health field to consider salience not just related to child alone, but the salience of entire family, and there is an acceptance tendency to provide services on a family basis rather than simply to the individual presenting problem. There is abundant evidence that parents of disabled children undergo more than average amount of stress. However, research has also shown that stress is not an inevitable consequence in these families \(^2\). The nature of stress has significant effects over several aspects of family life such as daily care demands, emotional distress, interpersonal difficulties, financial problems and adverse social consequences.

In a study on families with a new born baby with Down Syndrome, differences in mental or physical health of the two groups of parents was found and also differences in their marital relationship was seen \(^3\). In general, increased levels of stress threaten a person’s well-being and produce automatic, persistent attempts to relieve the tension. When someone is coping with stress, a person is confronted with two challenges: To meet the requirements of the stressors and to protect oneself from psychological damage and disorganization. The mechanisms including such responses as denial and suppression, relieve and anxiety and protect the self from hurt and devaluation. They protect a person from external threats such as failures in work or relationships and non-internal threats, such as guilt arousing desires or action.

Viewing the profound impact of disabled child on the family the present study was designed to examine the level of stress among the parents and ways of coping with stress adopted by them. For this purpose, a controlled group of parents of normal children (in equal number) was also taken for the study so that the two groups of parents can be compared on their level of stress and ways of coping. The hypotheses are: (i) There will be significant difference in the level of stress between the parents of physically challenged and normal children and (ii) there will be significant difference in the stress coping strategies of parents of physically challenged and normal children.

**Methods**

**Samples**

Sixty parents (either father or mother) were taken for the study, out of which 30 were Parents of physically challenged male children and 30 were of normal male children. The distribution of samples was normally distributed Parents of physically challenged children were selected purposively on the basis of addresses
provided by the different special schools of Karachi. The normal children’s parents were also taken purposively from the similar socio-economic background. The parents of primary grade children whose age was ranged from 7-12 years were considered for both the categories.

**Tools**

Stress appraisal measure (SAM) by Peacock and Wong\(^4\) was used to assess level of stress among the sample. The measure consisted of 28 statements rated on a scale from 1 to 5 stating not at all, slightly, moderately, considerably and extremely. There were seven subscales of the measure and each subscale consisted of four statements which assess both primary and secondary cognitive appraisal as well as overall stressfulness. For assessing stress coping strategies, ways of coping questionnaire by Folkman and Lazarus\(^5\) was administered on the subjects. The questionnaire assessed thoughts and actions individuals use to cope with stressful situation of everyday life. The questionnaire consisted of 60 items divided into eight subscales. There were four alternative for each statement, i.e. does not apply or not used, used somewhat, used quite a bit and used a great deal. (All parents were able to understand English so they easily filled the forms).

**Procedure**

For the purpose of collection of data, different exceptional schools were visited and requested the heads of the institutions for addresses of children studying in their schools on the basis of addresses provided by their parents. They were contacted personally and data were collected with the help of above tools. Parents of normal children were also contacted individually side by side from the same locality in order to make both groups equal in some respects.

**Results**

The data obtained on the basis of administration of tools were analyzed with the help of different statistical techniques to describe the mean, standard deviation (SD), \(t\) and \(p\) values. The results are presented in the tables below.

Table 1 indicates that there were significant differences in the level of stress among the parents of physically challenged and normal children as mean scores on stress appraisal were found to be 112.5 and 39.0 for the parents of physically challenged and normal children respectively. The level of stress was found much higher among the parents of physically challenged children as evident from the results. The mean score on stress for the said group was found 112.5 against the maximum possible score of 140 whereas for the normal group it was 39.0 which was almost one third of the physically challenged group. The difference between the scores of two groups, was also found to be significant \((t=22.1, p<0.01)\). On the basis of the result, it can be said that birth of a disabled child in a family certainly puts pressure on the parents and increases their level of stress perhaps because parents of disabled children frequently wrestle with the terrifying feeling that they are in some way responsible for their child’s condition.
Table 1. Mean, SD and t values of Stress Appraisal and Stress Coping Strategies Scores among Parents of Physically Challenged (N=30) and Normal Children (N=30)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group</th>
<th>Mean</th>
<th>S.D.</th>
<th>t value</th>
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<td>Stress appraisal</td>
<td>Parents of physically challenged children</td>
<td>112.5</td>
<td>7.6</td>
<td>22.1**</td>
</tr>
<tr>
<td></td>
<td>Parents of normal children</td>
<td>39</td>
<td>5.0</td>
<td></td>
</tr>
<tr>
<td>Stress coping</td>
<td>Parents of physically challenged children</td>
<td>93.41</td>
<td>7.6</td>
<td>16.6**</td>
</tr>
<tr>
<td>strategies</td>
<td>Parents of normal children</td>
<td>49.3</td>
<td>4.61</td>
<td></td>
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</tbody>
</table>

** p< 0.01  S.D. Standard deviation

The findings on further analysis on coefficient of correlation between stress appraisal and ways of coping strategies is show in Table 2.

Table 2. Correlations between the scores on Stress Appraisal and Ways of Coping for Physically Challenged and Normal Groups

<table>
<thead>
<tr>
<th>Measures</th>
<th>Physically Challenged Group</th>
<th>Normal Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Correlations (r) between scores on stress appraisal and coping strategies</td>
<td>-0.49**</td>
<td>-0.35**</td>
</tr>
</tbody>
</table>

** p< 0.01

Discussion

Prevalence of guilt is one of the most commonly reported feelings among parents of exceptional children probably because primary cause of so many disabilities is unknown.

Similar finding was also obtained in a study which showed that mothers of handicapped children reported more family problems than did those of normal children\(^6\). Thus it can be inferred that parents of physically challenged children suffer from high level of stress unlike parents of normal children.
Hence the hypothesis of significance difference between the two groups of parents with regard to their level of stress is found to be confirmed.

As far as ways of coping with stress was concerned, the results revealed that there were differences between the scores of parents of physically challenged children and that of normal children as the mean scores for the two groups of parents were found to be 93.4 and 149.3 respectively. The findings clearly indicated that the stress coping strategies of parents of normal children were certainly better than the parents of physically challenged children. This indicates that parents of disabled children not only suffer from high level of stress due to presence of a disabled child in family but also found incapable of coping with stress properly. The failure of parents of physically challenged children on stress coping front can be attributed to the fact that mechanisms generally they adopt such as denial and suppression may relieve anxiety and protect the self from hurt and devaluation. Such mechanisms protect a person from external threats such as failure in work and relationships and not from internal threats like guilt arousing feeling or action. It is also suggested that family adaptation to a handicapped child is a result of the interaction between child related stresses, families’ resources and ecological variables. Thus it can be said that effectiveness of coping strategies depends on the nature and types of stress that is why parents of physically challenged children differ from parents of normal children on stress coping front which support the hypothesis (ii). It was found that the two variables were inversely related with each other for both the groups of subjects (r=0.49 and 0.35 for physically challenged and normal group respectively). On the whole, it can be concluded that the presence of a disabled child in the family causes tremendous amount of stress particularly among the parents and they find difficulty in managing them because stress of such type usually differs from everyday life stress.

References


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CASE REPORT

Psychiatric Presentation in Wilson Disease – Report of Two Cases

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Abstract

Wilson disease is an inherited metabolic disorder. It is an autosomal recessive disorder caused by mutation of ATP7B gene, which results in excessive accumulation of copper in the body and deposition in various organs. The clinical presentation varies and neuropsychiatric manifestations are common. It is a diagnostic challenge in the initial phase where it mimics other psychiatric conditions and the diagnosis of Wilson disease is based on a combination of laboratory tests and clinical features. Wilson disease treatment comprises of copper chelating therapy such as D-Penicillamine and zinc sulphate whereas the behavior and mood symptoms response well with atypical antipsychotic treatment. The present report illustrates two cases of Wilson disease in middle-aged patients. The first presentation involved changes in behavior and personality. There was some delay in making the diagnosis in the initial stage. Both cases were diagnosed to have Wilson disease after further investigations. Their condition improved with the combination of copper chelating agent and atypical antipsychotic. In conclusion, it emphasizes the awareness of psychiatric manifestations as the initial presentation of Wilson disease.

Keywords: Wilson disease, Psychiatric manifestation, Atypical antipsychotic, Chelating therapy

Introduction

Wilson disease, otherwise known as progressive hepatolenticular degeneration, is a rare autosomal recessive disorder caused by the mutation of ATP7B gene. ATP7B gene is responsible for the formation of copper transporting P type ATPase (Wilson disease protein). As a result, the transportation of copper in the body is impaired in Wilson disease. This copper is then deposited in various organs where it causes dysfunction of that particular organ such as liver, brain and kidney1.

The clinical presentations of Wilson disease are broad and involve multiple organs. It is usually asymptomatic in early life period and then presented with unexplained liver, neurological or psychiatric problems2.
Hepatic manifestation usually appears earlier (between 8 to 18 years old) than the neurological manifestation (in early adulthood)\(^3\). Liver disease ranges from asymptomatic form with elevated liver enzymes or liver enlargement, chronic hepatitis with steatosis, and fibrosis to liver cirrhosis or chronic liver failure\(^4\). Neurological disorders occur in 40-50% of patients with Wilson disease. It is characterized by cumulative motor dysfunction. Clinical signs include asymmetrical distal accentuated tremor of the hands, wing beating tremor and tremor of the head, rigidity, dystonia and bradykinesia\(^5\). The mean age of onset of psychiatric manifestation in Wilson disease is around 20 years old. It could be classified as affective disorder spectrum and schizophreniform-illness\(^6\). The commonest psychiatric symptoms include incongruous behavior, irritability, depression, and cognitive impairment\(^7\). There has been a reported case of Wilson Disease presenting with non-persecutory delusional disorder and alcohol abuse in the absence of neurological signs\(^8\).

The treatment of Wilson disease is decoppering therapy. It is to reduce the copper accumulation in the body, either by enhancing its urinary excretion or by reducing its intestinal absorption\(^2\). D-Penicillamine is used to enhance urinary excretion of copper by forming copper-penicillamine complexes. The complexes are then excreted in the urine. Treatment usually starts at lower doses and increases gradually. Pyridoxine (vitamin B6) is given as adjuvant therapy to prevent vitamin B6 deficiency. Some patients were found to be intolerant in the initial period due to side effect or hypersensitivity and became tolerated to the treatment eventually. Another treatment option is zinc sulphate. Zinc increases the levels of intestinal cell metallothionein which has a strong affinity for copper. This inhibits further copper absorption and promotes its loss in the faeces. It is mainly used for asymptomatic patients or maintenance therapy. Zinc sulphate was found to cause less neuropsychiatric complication as compared to D-Penicillamine. Liver transplantation is the ultimate treatment for patients with Wilson disease. However, neuropsychiatric symptoms are always a contraindication for liver transplantation\(^2\).

**CASE REPORT 1**

A 49 year old Chinese, lady, housewife, married with 2 children presented to us with abnormal behavior for the past 6 months. Her illness started with tremors of both her hands and caused impairment in her daily function. The tremors were non-remitting, but lesser when she was asleep, according to her husband. The symptom went on for a few months and she began to have occasional jerky movement of her head. This led her feeling awkward in social gatherings and she started to avoid going out. She was seen by a general practitioner...
who subsequently referred her to a private psychiatrist. The psychiatrist treated her with oral Sertraline and Alprazolam for anxiety. The tremors did not improve, and her jerky head movements were more frequent.

One week prior to consultation in our centre, her condition deteriorated whereby she behaved abnormally. She did not sleep at night and like to wonder outside her house. She would order food at the restaurant without paying. She talked and asked for money from strangers. She claimed to be the owner for all shops and restaurants in her area where she started to eat and take things from shops without making any payments. She occasionally laughed and talked very loudly to her sister. Her speech was irrelevant and incoherent most of the time. She also spent excessively on lottery and need to be coaxed to have her bath and change her clothes. She would turn on the television and radio loudly at home causing a lot of disturbance to the neighbors. She became very argumentative with her mother and her family found it difficult to talk to her as she was talking fast and difficult to be interrupted.

On the day of consultation, the patient appeared very agitated and assaultive toward her sister. She was found to have no history of auditory hallucination, deliberate self harm or illicit substance use. Upon further enquiry, the patient’s 45 year old brother was diagnosed with Wilson’s disease about 10 years ago and is still under treatment.

Physical examination revealed that she had involuntary jerky rhythmic movement of her head – titubation which persisted even with distraction. She also had involuntary resting tremors of both her upper limb. Her gait was fairly normal. There was no past-pointing or dysdiadochokinesia. Motor examination was normal and her sensation was intact. She had Kayser Fleisher rings under slit-lamp examination.

Blood investigations showed that complete blood count, liver function test, renal function test, random blood sugar and serum magnesium were all within normal limits. The serum ceruloplasmin were <0.09 (Low) and serum copper were 5.1 (Low). The urine copper 24 Hours were 0.78 (High). The CT and MRI brain reported as normal study. No cerebral atrophy seen and basal ganglia was normal.

She was diagnosed to have Wilson disease and started on D-Penicillamine 250mg bd (copper chelation therapy) by the neurologist. She and her husband were counseled about the disease and life-long therapy. She was also seen by the psychiatrist and diagnosed as having psychosis secondary to Wilson disease according to DSMIV. She was started on tablet Olanzepine 2.5 mg BD. Her psychotic symptoms resolved with the medication and the patient was much better and manageable. However, her tremors were still present. She was on the atypical antipsychotic treatment for a year at the time this case was reported. There was no report of any adverse event.

CASE REPORT 2

A 35 year old Malay gentleman who is a lecturer of civil engineering in a local university was presented to us with the changed of behavior for the past two months. According to his wife, he was noticed to be easily irritable and increase in sexual libido. He was withdrawn and agitated where he became verbally abusive towards his parents. He also behaved disinhibited in front of his children occasionally. A week prior to admission, he checked into a luxury hotel alone for no
specific reason. He was behaving aggressively in a hotel whereby he shouted at hotel staff and damaged hotel property. As a result, he was arrested and sent for assessment in a government hospital. He was admitted for five days and no conclusive clinical impression was made. He was then discharged with no medication and to be seen again in outpatient clinic. His condition did not improve and became more restless at home. As a result, he was brought by family to our centre for consultation. He has no past history of mental illness and neither did his family. There is no history of illicit substance use.

Physical and neurological examination showed that he had right wrist cogwheeling, Left hand passpointing, bradykinesia, difficulty using small muscles of the hands and apraxia. He had difficulty initiating gait and had shuffling gait upon mobilizing. He had loss of arm swing when walking. He had Kayser Fleisher rings and it was confirmed by slit-lamp examination. On mental state examination, he was forthcoming however easily irritable and provocative. His speech was coherent and relevant but monotonous. There was increase in ideas and he was paranoid towards his wife. At some point during admission he had tactile hallucination saying he was bleeding from his nose, rectum and ears.

Mini mental State examination showed he had micrographia and impaired cognitive function whereby he scored 22/30. There was impairment in area of recall, orientation and unable to follow complex commands.

Blood investigations revealed that complete blood count, renal function test, thyroid function test, random blood sugar and serum magnesium were all within normal limits. Screening for hepatitis, HIV and VDRL were all negative. Liver function test (LFT) showed elevated GGT 170 and low total protein and albumin count, 62 and 30 respectively. The serum ceruloplasmin were <0.07 (Low), serum copper were low and the 24 hours urine copper were raised. Urine porphyrin was negative. Both CT and MRI brain showed cerebral and cerebellar atrophy with no intracranial bleed. The atrophy was more prominent in the frontal lobe.

He was diagnosed to have Wilson disease and started on D-Penicillamine 250mg bd in the neurology ward. He was also seen by the psychiatrist and treated as mood disorder due to Wilson disease according to DSM IV. He was started on quetiapine XR 100mg daily and the dose was titrated up 400mg on discharge. He became less irritable and more manageable at home. He was on atypical antipsychotic treatment for a year at the time this case was reported and did not experience any adverse events.

Discussion

Wilson disease is due to inborn error of copper metabolism and it may present in the early phase with neuropsychiatric symptoms. This is concurred with Wilson himself, whereby he described behavioral aspects of this disease in 8 of 12 of his patients and called this “psychical” form in his initial monograph6. Disease of inborn errors of metabolism with neuropsychiatric symptoms may often lead to final CNS dysfunction, delirium and coma9. The presentation for Wilson’s disease is varied and proves to be a diagnostic challenge. This is because psychiatric manifestations can present early in the disease progression and it can occur before hepatic and neurological manifestation2. The psychiatric manifestations for Wilson’s disease are divided into 5 domains: personality changes,
affective disorders, psychosis, cognitive impairment and others. The most common psychiatric manifestation is personality changes in particular irritability and aggression accounting for (45.9%) and depression followed with (27%). Among the less frequent occurrence are cognitive changes, anxiety, psychosis, and catatonia.

The similarity in these 2 cases is that both patients had change in personality, whereby they became more aggressive and impulsive. In the first case, the patient felt that she own the shops and spent excessively on lottery. There was also deterioration in function and it came to a point she was unmanageable and needed medical attention. She was treated in outpatient setting and her psychotic symptoms settled with an atypical antipsychotic, olanzapine. In the second case, the patient was disibited and very agitated. He was admitted and started on a different type of atypical antipsychotic, quetiapine.

Quetiapine was shown to be effective in treating affective symptoms. The dose was titrated up from 100mg to 400mg, and his mood symptoms improved. All in all, in both cases they were treated with fairly good results using atypical antipsychotic.

In conclusion, one must be aware of the possibility of an organic cause in persons who are presented with atypical psychiatric presentation for the first time. As such clinician must bear in mind that inborn errors of metabolism such as Wilson Disease can be initially presented with psychiatric symptoms.

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A Case of Excited-Type Catatonia: The Need for Early Recognition and Treatment

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Abstract

We report a case of catatonia of the excited-type in a 59 year old male with known schizophrenia, ischaemic heart disease and cerebrovascular disease. The main presenting features were excessive motor activity, bizarre posturing, impulsivity, disorganised speech and confabulation. Regular daily use of a low dose of lorazepam was shown to be effective in this case with resolution of symptoms. Difficulties were encountered in trying to determine the exact cause of his catatonia.

Keywords: Catatonia, Excited, Management, Aetiology

Introduction

Catatonia is a neuropsychiatric syndrome of motor and behavioural dysregulation linked to various aetiologies but unified by a common underlying pathogenetic process that is yet to be fully understood.¹, ² An essential feature of this condition is the rapid and effective response to benzodiazepines or electroconvulsive therapy (ECT), both of which are well documented in the literature. A severe form of this condition, known as malignant catatonia has been associated with a death rate as high as 9%.³ Thus, it is important to recognize the clinical aspects of this condition. We therefore present a case on catatonia and the difficulties involved in uncovering the underlying cause.

Case Report

Mr. A is a 59 year old Caucasian male who presented with attempted self-harm. He was diagnosed with schizophrenia in the 1980s and is also known to have stable angina, and substance misuse with alcohol and cannabis. In this presentation, he was found wandering outside the police station threatening to kill himself due to a low mood. He had apparently left his wife 3 days ago and spent this time living off the streets.

A mental state examination instead revealed a labile mood with incongruent affect. He appeared irritable and easily excitable. His speech was pressured with confabulated contents that sometimes made no sense.
There was associated perseveration and at times, use of a foreign American accent. He appeared to have impaired concentration but scored 27/30 on a MMSE, losing the few points in orientation of time. During his admission, he displayed bizarre posturing, odd mannerisms and impulsivity. At times, he would be observed pacing up and down the ward, speaking constantly to himself or anyone that passed by. He would also repeatedly attempt to abscond from the ward to contact emergency services with various “made up” scenarios, such as a broken ankle. Physical examination, routine blood sampling and urine toxicology tests carried out were unremarkable.

A speech and language therapy (SLT) assessment revealed impairments across a range of language modalities with semantic and word finding difficulties alongside his stereotypical speech. A neuropsychological assessment highlighted difficulties in orientation, attention, memory and reduced executive functioning. An occupational therapy assessment of his kitchen skills revealed him to be “chaotic” and unsafe.

Catatonia was suspected and the Bush-Francis Catatonia Rating Scale (BFCRS) was selected to assess this. There are 2 components to the BFCRS; a screening component of 14 items, where having 2 or more listed symptoms is indicative of catatonia, and a severity component of all 23 items, each given a score of 0 to 3. He had 7 different symptoms in the screening component and scored a 13 overall on severity. Catatonia of the excited form was diagnosed. A trial of regular oral lorazepam of 1mg tds was initiated. A dramatic resolution of his symptoms ensued within the first day. His bizarre posturing and mannerisms were no longer present. Reassessment by SLT services showed complete resolution of his stereotypical speech with improved working memory and frontal executive functioning. Occupational therapy assessments in the kitchen and outdoors now reported that he was displaying appropriate living and social skills.

Further investigations were carried out to pinpoint the cause of his catatonia. His recent EEG was unremarkable however a MRI brain scan and a SPECT scan revealed multifocal areas of ischaemic changes in the subcortical deep and periventricular white matter with involvement beyond the frontal lobes of both hemispheres.

Discussion

Catatonia is commonly divided into an excited or withdrawn type depending on the patient’s presenting signs, although the picture is often mixed. Classic withdrawn-type catatonia is characterised by stupor, mutism, negativism, and posturing while excited-type catatonia is attributed to mannerisms, rituals, disorganized speech, disorientation, aggression, and violence. Studies have shown the prevalence to range from 7-38% of psychiatric inpatients. In another large study, clinicians diagnosed catatonia in 2% of 139 psychiatric inpatients. However, the research team identified catatonia in 18% of patients, pointing towards a trend of underdiagnosis. There are a number of catatonic rating scales that can be used for screening purposes, as evaluated by Pascal et al. The study concluded that the Bush-Francis Catatonic Rating Scale (BFCRS), Northoff Catatonic Rating Scale (NCRS) and the Braunig Catatonic Rating Scale (BCRS) are all reliable for use. The BFCRS was considered preferable and was used in this case for its validity, reliability and ease of use.

There were several difficulties and thus,
learning points, encountered in diagnosing catatonia in this case. Firstly, his excitatory symptoms were mild and varied throughout the day. In this case, a longer period of detailed observation as an inpatient helped. He also has a history of making up symptoms to gain attention and later on admitted them to be false.

The treatment of catatonia is well established in the literature, consisting initially of benzodiazepines and/or ECT treatment. According to a review by Fink et al., the efficacy of using lorazepam alone in treating catatonia ranged from 80-100% in 4 studies. A “trial” dose of lorazepam is usually given once catatonia is suspected. A low dose of 3mg/d is initially started. This is then titrated up as required, sometimes as high as 20-30mg/d. In this case, a dose of 1 mg tds was sufficient. ECT is reserved as second line treatment, with a reportedly high success rate ranging from 82%-96% in 5 different studies. Recently, numerous case reports have also reported success in using NMDAR antibodies, amantadine or memantine, for patients refractory to both benzodiazepine and ECT treatment. However, there are currently no large studies regarding this as of yet. Importantly, the use of antipsychotics in catatonic patients is cautioned, as its use increases the risk of developing neuroleptic malignant syndrome.

The underlying cause for catatonia should be sought and treated as part of the management process. This can be difficult as there are many reported causes of catatonia, broadly classified into neurological, psychiatric and medical. More than one potential cause could be identified or none at all, in idopathic cases. Thus, it is important to appreciate that catatonia is a syndrome not just restricted to psychiatric patients and medical conditions should always be considered, regardless of existing psychiatric conditions, such as in this case. Important conditions to consider include epilepsy, encephalitis, cerebrovascular infarction or a mass lesion. Endocrine abnormalities, electrolyte imbalances and traumatic brain injury can also present with catatonia. All assessments should include a thorough history and physical examination, full blood count, urea and creatinine levels, liver function tests, thyroid function tests, urine drug screen, urinalysis, EEG and MRI brain scan. Other suggested tests if indicated, include vitamin B12 levels, folate, serum iron, HIV/AIDS serology, lumbar puncture and workup for systemic lupus erythematosus.

It is most often difficult to pinpoint the exact cause of catatonia. In this case, it was felt that the possible aetiologies were the underlying ischaemic changes in both frontal lobes and his preexisting diagnosis of schizophrenia. However, he had not experienced positive psychotic symptoms for the past 3 years and is currently doing well without any antipsychotic medications. Thus, the accuracy of his previous diagnosis of schizophrenia made in the 1980s is now pondered upon as he is currently maintaining well without any antipsychotic medications.

Conclusion

Through this case report, we highlight the importance of recognizing and managing catatonia early. It is not limited to psychiatric patients and other underlying causes should be sought. This case has also shown the BFCRS to be helpful and accurate in screening for catatonia. A low dose of benzodiazepine alone was shown to be effective in resolving all catatonic symptoms in this patient.
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Polymorphism of the serotonin transporter transporter gene (5-HTTLPR), stressful life events and associated risk factors of major depressive disorder patients in a UKMMC
Suriati Mohamed Saini, Azizah Mohd. Radzi, Abdul Hamid Abdul Rahman

Introduction: Gene-environment (GxE) interaction between serotonin transporter gene polymorphism (5-HTTLPR) in major depressive disorder has been found in multiple independent studies. However, data from Malaysia is lacking.

Objectives: This study aims to determine the association between the 5-HTTLPR polymorphism and stressful life events (GXE interaction) and determine factors associated with major depressive disorder.

Methodology: This is a candidate gene case-control association study. The sample consists of 55 major depressive disorder probands and 66 controls. The control group was healthy volunteers without personal psychiatric history and family history of mood disorders. They were Malaysian descents and were unrelated. Diagnosis of major depressive disorder was determined using Mini International Neuropsychiatric Interview. Stressful life events were assessed using Holmes and Rahe Social Readjustment Rating Scale. About 3-5mls of participants’ blood were sent to Institute Medical Research for genotyping.

Results: This study failed to detect the association between 5-HTTLPR polymorphism and stressful life events in the major depressive disorder. The predictive risk factors for major depressive disorder were increasing age, Chinese ethnic group, divorced/separated/widowed, unemployed, moderate and major stressful life events and increasing number of life events. The frequency of l allele in the healthy controls in our population was higher (78%) than that of Caucasian and East Asian population.

Conclusion: The GXE interaction in major depressive disorder was not found in this study. The predictive risk factors for major depressive disorder were consistent with previous epidemiological studies with the addition of the Chinese ethnic group. In view of heterogenous population in Malaysia, we recommended that future study should employ a larger sample size or use of genomic control method to overcome population stratification in Malaysia.

Pain interference level and its effects on patients’ quality of life: a study on breast cancer survivors in HKL, Malaysia
JO Zubaidah, AR Hejar, YW Lim, KT Chin, Z Mohd Aizuddin, Z Mohd Hazeman, MA Muhd Najib

Objectives: This study aims to investigate the impact of pain interference on quality of life of breast cancer patients.

Material and Methods: 87 female patients were administered a Malay an Chinese version of Breast Cancer Patient Version of Quality of Life (QOL) Instrument consisted of five main
aspects of QOL: physical, psychological, social well-being, spiritual well-being, and patient’s experience of illness and treatment.

Results: The patients were divided into 4 groups based on the rating of how pain and aches have been a problem to them (not a problem at all, mild problem; moderate; and severe). There were no significant differences between groups in terms of their ethnic and age groups, level of education, marital and occupational status as well as their current stage of cancer. Pain and aches was reported as the most severe problems by patients in the physical domain [mean=5.84, SD=2.88]. Patients who reported that pain and aches have been a severe problem to them significantly had the lowest score on almost all aspects of quality of life while patients reported pain was not a problem at all demonstrated highest score on all aspects of QOL (F-value > 3, p<0.0001).

Conclusions: ‘Pain and aches’ was reported to be the most interfering problem in physical domain of QOL indicating its significance in managing patients with cancer. Failure to acknowledge pain will lead to health care providers administering inadequate treatment to patients that will potentially lead to the deterioration of their quality of life as suggested in this study.

Psychological distress among the family caregivers of breast cancer patients receiving oncologic treatment at HKL
Siti Hazrah Selamat Din, Siti Nor Aizah Ahmad, Nik Ruzyanei Nik Jaafar

Introduction: Psychological distress such as depression, anxiety and stress, have long been known to affect the caregivers of breast cancer patients worldwide however the situation among this group in Malaysian population was not known.

Objectives: To determine the proportion of psychological distress among the caregivers of breast cancer patients receiving oncologic treatment in Kuala Lumpur Hospital and to determine the associations between the patients’ as well as the caregivers’ factors with this condition.

Methodology: A cross-sectional study was conducted on 130 breast cancer patients receiving treatment at the Institute of Radiotherapy & Oncology, Kuala Lumpur Hospital and their caregivers. Subjects were recruited by non-random sampling method. Data on the patients and caregiver’s socio-demographic status, the patient’s illness characteristics and the caregiving factors and caregiver’s perceived social support were collected. Caregivers were assessed for psychological distress using Depression, Anxiety and Stress Scale (DASS-21).

Results: Sixty-four (49.2%) of the caregivers in this study were found to have significant level of psychological distress, with 33.9% met the cut-off point for depression, 48.1% for anxiety and 38.9% for stress. Duration of caregiving, caregiver’s education level, caregiver’s marital status, caregiver’s medical illness, caregiver’s proximity to the hospital, and patient’s age were factors found to be significantly associated with psychological distress among the caregivers (p value <0.05).

Conclusions: There is a high rate of psychological distress among the caregivers of breast cancer patients in Kuala Lumpur Hospital and several factors were found to be associated with this condition. In order to ensure optimal management of this group of cancer patients, screening for distress in their caregivers is essential in identifying and supporting the caregivers who are potentially vulnerable.
The prevalence and associated risk factors in female sexual dysfunction among women with infertility in UKMMC
Yeoh SH, Hatta Sidi

Objectives: Infertility has been negatively affecting 350,000 Malaysian women. The presence of female sexual dysfunction (FSD) further dampens the negative consequences. The relationship of infertility and FSD is complex and bidirectional. The main objective is to study the prevalence of FSD and its potential risk factors that may impair sexual function among women attending the fertility clinic at UKMMC.

Methodology: This is a cross-sectional study. A locally validated Malay version of Female Sexual Function Index (FSFI) was applied to assess FSD. A total of 150 married women with infertility participated in the study. The sociodemographic & marital data, infertility condition, gynaecological & medical conditions, male partner sexual function, endorsement of sexual response cycle model and psychological profiles were measured. Women who had FSD and who had not were compared, and the risk factors of FSD were identified.

Results: The mean age was 32.3 years old, predominantly Malay, employed with higher educational attainment. On average the duration for planning of conception was 3.8 years, predominantly cases were primary infertility, female factor contribution to infertility was identified in 30.7% of cases. The prevalence of FSD was 11.3%. The prevalence of women with desire disorder, arousal disorder, disorder of lubrication, orgasmic disorder, sexual pain disorder and sexual dissatisfaction were 10.7%, 8.0%, 8.0%, 8.0%, 10.0% and 13.3% , respectively. The statistic significant risk factors for FSD were longer duration of marriage (p=0.016), perceived pressure from husbands to conceive (p=0.014) and lower husband’s sexual function (p<0.001).

Conclusion: Every one in ten women visited fertility clinic suffered from FSD. The significant risk factors (longer duration of marriage, perceived pressure from husbands to conceive and lower husband’s sexual function) emphasized the importance of interpersonal relationship and male partner’s role in female sexual health, which also implied the importance of couple approach in the management of FSD in infertile women. The findings also probably speak more for the need to pay attention on the “psycho-social” aspect than “pharmacological treatment” for female with sexual difficulties. The fact that the psychological sub-domains of FSD are more prevalent than physical sub-domains of FSD informed the bigger role of psychological approach in FSD treatment.

Characteristics of abuse and depression among sexually abused adolescents
Suzaily Wahab, Sheila Marimuthu, Nor Asiah Muhammad, Susan Tan Mooi Koon

Objective: The main objective of this study is to determine characteristics of sexual abuse and its association with depression among sexually abused female adolescents attending Suspected Child Abuse and Neglect cases (SCAN) clinic, Kuala Lumpur Hospital.

Methodology: This is a cross-sectional study, conducted from 1st June 2009 until 31st December 2009. The study was done in SCAN clinic Kuala Lumpur Hospital, involving 51 sexually abused adolescents. Questionnaire pertaining to sexual abuse characteristics, Schedule for Affective Disorders and Schizophrenia for School Aged Children (Kiddie-SADS – Present and Lifetime Version/ K-SADS-PL) and Strength and Difficulty Questionnaire (SDQ)(Malay translated version) were used in the study.
**Result:** 33.3% of the adolescents were diagnosed to have Depressive Disorders. Univariate analysis showed factors such as age when abuse and duration of abuse were associated with depression.

**Conclusion:** Characteristics of abuse should also be taken into account in the management of sexual abuse to ensure better outcome in the victims.

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**The influence of the internet on suicidal behavior: a review of the literature and implications for prevention**

Lai Mee Huong, Chan Lai Fong, Maniam Thambu

**Background:** The internet, especially social media has become increasingly popular and has a profound impact especially on the younger generation. There is evidence of some associations between internet and suicidal behavior among young people.

**Objectives:** This presentation is a review of the literature on the relationship between suicidal behavior and the internet, especially the social media.

**Method:** The English literature between 2000 and 2011 was reviewed, using the following search engines: Science Direct, Medline, Pubmed, EBSCO and Wiley Journals, including keywords of internet, suicidal behavior, suicide prevention.

**Results:** Around 200 articles were reviewed. The findings showed that the internet can be both a risk and protective factor with regards to suicidal behavior especially among young people. As high as 91 cases of ‘net-suicide’ (formation of suicide pacts between strangers who meet over the internet) were reported in Japan in 2005 and pro-suicide websites are among some of the negative influences. The possible benefits include proper internet reporting of suicides, online emotional support group and internet counseling.

**Conclusion:** The internet seems to be a double-edged sword in terms of suicidal behavior among young people. Though it may increase the risk of suicidal behavior, it also has the potential as a means of suicide prevention. Further studies are needed to understand the mechanism involved the association between suicidal behavior and the internet, especially social media.

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**Factors associated with metabolic syndrome among outpatients with major depressive disorder in UKMMC**

Nina Hoklai Hat, Shahrul Azhar Md Hanif, Chong Lip Leong, Ee Wei Sheun, Amirah Roslee, Shamsul Azhar Shah, Hazli Zakaria, Nik Ruzyanei Nik Jaafar

**Introduction:** Metabolic Syndrome is a major concern for the general population but more so for depressed patients. While it is well established that it is highly prevalent among patients who are depressed, none of the local studies identified the factors contributing to the syndrome.

**Objective:** Thus, this study was done to determine the prevalence of metabolic syndrome and its associated factors (socio-demographic, clinical features and lifestyle risk factors) in depressed patients.

**Methodology:** A cross sectional study was conducted on patients with major depressive disorders (MDD) attending Psychiatric Clinic, UKMMC. A total of 72 outpatients who fulfilled the selection criteria were informed to fast prior to blood taking. The diagnosis of MDD was made based on Diagnostic Statistical Manual Version IV (DSM-IV) while the metabolic
syndrome diagnosis was made using the International Diabetes Federation (IDF) criteria based on the patients’ waist circumference, blood pressure, serum glucose level and lipid profile.

**Results:** The prevalence of metabolic syndrome was 37.5% (n=27). The results showed significant associations between metabolic syndrome and race (p=0.043), illness duration (p=0.043) and pre-existing hyperlipidaemia (p=0.032). Interestingly, there were no significant associations between physical activity (p=0.762), dietary intake (p=0.671), severity of depression (p=0.161) and the different types of medications (p=0.242 to 1.000) with metabolic syndrome.

**Conclusion:** This study suggests that timing is crucial in the management of metabolic syndrome in depressed patients, where early screening would be most beneficial. Subsequently appropriate intervention can then be initiated in anticipation of future complications.

*Theme: Psychiatric Services*

**Co-morbidity, treatment gap, disability and perceived need-mental health services in primary care setting of Kota Kinabalu**

Ahmad Faris Abdullah, Harry Minas, Graham Meadows, Narappa Kumaraswamy

**Introduction:** Prevalence and treatment gap of common mental disorder in primary care varies among the Low and Middle Income Countries. Rapid social changes have influenced negatively the mental health indicators among Asian countries. Mental health services in the public health sector in Sabah are still rudimentary compare to the rapid socio-economic challenges.

**Objective:** The study was designed to determine the prevalence, treatment gap, disability and perceived need among primary care attenders with probable common mental disorder among primary care attenders in Kota Kinabalu.

**Methodology:** This is a Cross-sectional, general health clinic based study among primary care attenders in Kota Kinabalu district of Sabah from April 2010 to August 2010. The project received medical ethics approval from UMS JKEtika 1/09(1), NMRR-09-734-4539, The University of Melbourne 0829832. Simple random sampling was used to select patients at three government general outpatient clinics. 430 consented and 51 patients (10.6%) refused. Participants were interviewed by trained interviewers using a Patient Health Questionnaire, Work and Social Adjustment Scale, General Practitioner User Perceived Need Questionnaire and Mental Health Service Utilization Questionnaire.

**Results:** The prevalence of common mental disorder was 52.1% with 22.1% co-morbidity, substantially higher than in West Malaysia. 25.0% of 224 participants who had common mental disorder experienced moderate to severe disability. 91.5% had received no treatment, and 18.8% - 42.4% had perceived unmet needs.

**Conclusion:** In summary, there is huge treatment gap, high co-morbidity and unmet needs. Therefore, mental health service in this setting needs to be reviewed and addressed.

**Designing and evaluating a consultation liaison information program: learning from the field**

Kerry Crawford

**Introduction:** To introduce general nurses to some of the key concepts in managing patients with mental health issues.
**Objective:** The objective of this evaluation was to assess the mental health knowledge/needs of general nurses, as well as the effects on an in-service education program on their acquisition of knowledge and skills. The ultimate goals of the education program are to empower nurses to nurse patients holistically, reduce stigma towards patients with mental illness and to improve the patient’s recovery and wellbeing.

**Method:** This evaluation was done in 2010. It involved 61 (n=61) nurses in general wards using both Likert-scale and free-text responses as a way of rating a number of aspects related to mental health. These tools were given to participants to rate after the educational program.

**Results:** There were a total of 61 participants in the program. However, only 31 are included for this evaluation: The majority of participants were registered nurses. The participants were fairly distributed among the various units. 30% had poor knowledge about mental health issues and a third also did not know about the Consultation Liaison Service. 75% felt comfortable in contacting the Consultation Liaison Service after the session.

**Conclusion:** The Consultation Liaison in-service education sessions had a positive effect on general nursing staff’s knowledge and ability to contact the Consultation Liaison Service for effective mental health care of their patients.

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**Coping strategies in relation to clinical variables: an insight within patients on methadone maintenance treatment (MMT) in Terengganu**

Nor Samira Talib, Lua Pei Lin

**Introduction:** The ways patients cope may differ from one another and studies of coping have proven to be useful in behaviour research including those with addiction problem.

**Objective:** This study intended to 1) identify the preferred coping strategies in opioid abusers and 2) compare coping strategies based on socio-demography and clinical characteristics.

**Methodology:** A convenient sample of patients from seven Methadone Maintenance Treatment (MMT) centres in Terengganu was enrolled (2 hospitals, 4 clinics and 1 National Anti-Drugs Agency’s centre). The Malay Brief COPE was administered to evaluate coping strategies. Data was analysed using SPSS 16, employing descriptive and non-parametric statistics.

**Results:** Sixty out of 63 patients (response rate = 95.2%) consented participation (mean age = 34.7 years; married = 58.3%; ≥ SPM education = 50.0%; < 15 years of addiction = 51.7%; employed = 91.7%; rural residents = 65.0% and daily methadone dose < 60mg = 53.3%). Religion was the most preferred coping strategy (83.4%) followed by both Active Coping and Acceptance (75.0%). Those who possessed higher education background (≥ SPM) coped significantly better through Active Coping and Planning (p < 0.05). Patients on lower methadone dosage (< 60mg) also coped actively while younger patients (< 35 years) mostly employed Instrumental Support to solve their problems (p < 0.05).

**Conclusion:** Active Coping seemed popular among MMT patients and some background characteristics appeared to influence the type of coping strategies in dealing with their addiction problem. Counselling on coping strategies has potential benefits if incorporated in MMT planning to achieve better health outcomes.
Effectiveness of counseling to modify the attitudes of mothers towards their intellectually disabled children
Saravanan, C & Rangaswamy, K

Introduction: Mothers’ attitudes have a strong impact on the development of their intellectually disabled children’s personality and behaviour. Mothers’ of intellectually disabled children have more negative attitudes of their children compared to mothers’ of normally developing children. These attitudes may impact negatively on their intellectually disabled children. If mothers’ attitudes are negative, psychological intervention for their children may be ineffective. Therefore, there is a need to modify mothers’ negative attitudes before psychological intervention is given to their intellectually disabled children.

Objective: The primary objective of this study was to compare the attitudes of mothers before and after psychological counseling.

Methodology: Thirty two mothers of mildly intellectually disabled children participated in six individual counseling sessions. The Binet Kamat Test of Intelligence (Kamat, 1967) was used to measure the children’s intellectual quotient and The Parental Attitude Scale (Rangaswamy, 1995) was used to measure the mothers’ attitudes to their mildly intellectually disabled children.

Results: Mothers who exhibited higher negative attitudes, such as over-protection, domination, rejection, hostility, acceptance, permissiveness, education and future, and home-management in the pre-assessment showed significant reduction in their negative attitudes in the post-assessment after they participated in psychological counseling.

Conclusion: The psychological counseling is effective in modifying mothers’ negative attitudes to their intellectually disabled children. These mothers are suitable for parental training to modify their intellectually disabled children’s psychological problems.

The traditional belief system in relation to mental health and psychiatric services in Sudan
Ehab Ali Sorketti Koriana, Nor Zuraida Zainal, Hussain Habil

Introduction: Use of Traditional healers’ services is common practice worldwide, especially in developing countries. Only few studies have concentrated on the use of traditional healers services by people with mental disorders. We have tried to understand the traditional belief system in relation to mental health and psychiatric services in Sudan.

Objective: The aim of the Research is to understand: The Socio-demographic Characteristics of the People with Mental Disorders who seek Treatment in the Traditional Healers Centers in Central Sudan. To know the Clinical Presentations, diagnosis, and the Outcome of the Traditional Healing Methods and interventions used for Treating People with Psychotic Disorders. We also aimed to understand The Traditional Healers Profile, Knowledge, Belief attitude and Practice towards people with mental disorders.

Methodology: We used both qualitative and quantitative research methods to conduct Four studies: Study1: Knowledge Attitude and Practice of the Sudanese Community towards Mental illness, Traditional Healing and Modern Psychiatric treatment: Study 2: Descriptive Cross-sectional study. Study 3: follow up study of cohort of psychotic patients. Study 4: Traditional healers Profile study. Study area: 10 selected traditional healers’ centers in Central Sudan. Study population and Sampling: 405 in-patients with mental disorders undergoing treatment in the traditional healers’ centers and 30 traditional healers were recruited .The Sample size was calculated using the Kish Leslie formula for single proportions for descriptive study. Measures
and instruments: Structured Questionnaire, (MINI) mini international neuropsychiatric interview to illicit the diagnosis. PANSS, Positive and negative Syndrome Scale was used to assess the psychotic group of patients on admission and discharge from traditional healers centers. Ethical approval was obtained before the start of the study and informed consent was obtained from all participants.

**Results:** 405 were interviewed; 309(76.3%) were male and 96(23.7%) were female. The mean age was 31.48 years. 69.4% (281) were from Central Sudan, 64.4% (261) were single. 34.1% (138) never been to school, 39.3 % of 159 studied in primary school, 19.5 % of 79 studied until secondary school level. 46.9 % of 190 are jobless. The mean duration of stay in the traditional healer center is 5 months. The mean duration of untreated illness is about 14 months. 15.8 % of 64 were found to have major depressive Disorder, 27.4% (111) have Manic episode, and 34.6 % of 140 were found to have psychotic disorders, 5.9% (24) have generalized anxiety disorder. Interventions Methods were Restriction of food in 86.9 % of 352 Chaining of the patients in 69.9 % of 283. 33.3% (135) patients were isolated. In 15.8% no visitors were allowed. In 18% their psychiatric medication were stopped by the healers. Recitation of the holy book was used as a method of treatment in all patients in the selected 10 traditional healer centers. Bakhra in 99.3%, and Mehaya in 93.1% of cases. We manage to follow up 129 patients with psychotic disorders from admission until discharge from the traditional healers’ centers to study the outcome of the traditional healers’ intervention. The Mean for the overall PANSS score on admission was 118.36 and 69.36 on discharge. There was 49 % reduction on the PANSS score (P=0.0001). 28 traditional healers were interviewed to assess the Traditional Healers concept attitude and practice towards people with mental disorders. Fifteen (54%) of the healers believed that psychiatric medication was useful for treating mental illness and they believed that combining traditional treatment and psychiatric medication could be useful. Belief in the value of psychiatric medication and modern psychiatric management was related to the educational level of the traditional healer: the more years of formal education the healer had received, the stronger was the belief in modern methods of management and the use of psychiatric medication for treating people with mental illness (P = 0.025). 89% (25) of the traditional healers were ready to collaborate with psychiatrists and mental health services.

**Conclusion:** It is vital to establish channels of collaboration and common understandings between traditional healers and mental health professionals in Sudan and other African countries where a majority of people with mental illness consult traditional healers first. Collaboration could help in the early detection and early management of mental disorders, with the prospect of better outcomes. Collaboration could also help to end harmful methods of practice by the traditional healers, such as isolating patients in an unhealthy, non-hygienic environment, depriving patients of nutritional food, beating patients, misdiagnosis and mismanagement. Also may help to improve community awareness and decrease the stigma of mental illness. The traditional healer centers could be used as basis for community rehabilitation facilities for people with mental illness. Improving the education level of traditional healers might enable them to have a better understanding of mental illness and of the benefits of modern psychiatric treatment.
Effect of a pharmacy-managed adherence program on the attitudes and beliefs of patients with depression towards antidepressants
Sabrina A Jacob, Ab Fatah Ab Rahman, Mohamed AA Hassali, Ahmad Z Zakaria

Objective: To determine the effects of a pharmacy-managed adherence program on patients’ adherence rates as well as attitudes and beliefs.

Method: A randomized prospective study of depression patients at an outpatient clinic was carried out. Patients were randomized to either the intervention group (IG) or the usual care group (UCG). Patients in the IG received counseling, written information and a specialized medicine label at baseline (t0), 1 month (t1), and 3 months (t2). They also received follow-up phone calls at 2 weeks, 2 months, 4 months, and 5 months. Adherence was assessed using the Medication Adherence Rating Scale (MARS), while attitudes and beliefs were analyzed using the Antidepressant Compliance Questionnaire (ADCQ) for 6 months (t3). UCG did not receive any information or phone-calls.

Results: There were 51 and 53 patients in the IG and UCG respectively. Adherence from baseline significantly increased in the IG but decreased in the UCG at t3 \( c^2(1, N = 104) = 6.47, p = 0.02 \). Component 3 of the ADCQ (positive beliefs on antidepressants) revealed an increase in the IG and a decrease in the UCG at all time points from baseline. Results were significant between the IG (M=24.89, SD=3.11) and UCG (M=23.64, SD=2.87) at t3, t(102)=2.13, p=0.04. There was a positive correlation between ADCQ and MARS scores at t1(r=0.274, n=104, p=0.00), t2 (r=0.316, n=104, p=0.00) and t3 (r=0.375, n=104, p=0.00).

Conclusion: An adherence program which incorporates patient education and systematic follow-up is effective in improving patients’ adherence as well as attitudes and beliefs.

Does assertive community treatment (ACT) improve rehospitalization?
Rahima Dahlan @ Mohd Shafie, Marhani Midin

Introduction: The subjective view of service providers towards Assertive Community Treatment (ACT) in many of the centers is rather favorable. Generally, it is perceived as beneficial at least to the most complex and chronic patients like schizophrenia. Unfortunately in Malaysia, it is still largely unexplored although generally observed to be useful in further enhancing the management of patient with severe mental illness.

Objective: To determine the rehospitalization and its influencing factors among patients with schizophrenia receiving ACT.

Methodology: A cross sectional study was conducted on 155 patients with schizophrenia who received Assertive Community Treatment in Hospital Kuala Lumpur (HKL). The selection was made by simple random sampling. The hospitalization profiles were obtained from clinical records. The socio-demographic and relevant clinical data were also assessed.

Results: Hundred and forty (90%) from 155 respondents were having low rate of rehospitalization with significant reduction of being hospitalized within one year after receiving ACT (p<0.001). According to logistic regression, the strongest predictors of low hospitalization rate was having good social support (p=0.017).

Conclusions: The ACT program has made an improvement to the mental health care in the community and has already proved to be a practical program to be carried out. It has made a lot of differences in the mental health care as shown in the decreased reliance on long term facilities
by reducing hospitalization. The social marker evidence in this study could be the target for intervention by mental health program to enhance the effective delivery of ACT.

Abstracts For Poster Presentation

Malaysian Contribution in Mental Health Research: analysis of indexed journal publications 1960-2008
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Introduction: The importance of mental health and mental disorders as a public health issues are palpable among Malaysian experts for quite some time. There are several studies done in Malaysia focusing on psychiatric morbidity, mental health policy and profile, cultural beliefs, psychiatric services and rare syndrome that can be traced back to the 1960s. Objectives: The objective of this paper is to; describe the trend in publication, identify the most researched niche areas, to determine the percentage of primary research work, examine the participation of Malaysian and identify the various interested parties.

Method: Pubmed, Web of Science (ISI), Medline, PsycInfo, were used as databases to search for journal articles through the Supersearch from 1950s to March 2008.

Result: Out of 144 articles, 113 articles and eight complete abstracts were retrieved and appraised. The other 23 articles were not included because they were not study done in Malaysia but rather quoting Malaysia as an example.

Discussion: The last 10 years, had seen the peak of publication in mental health areas in Malaysia. It also shows that mental health research has received wider interest among researches with participation from local and expatriates. However it is realize that there is a divisional gap between East and West Malaysia contribution and lack of research in certain niche areas. Furthermore with modernization, urbanization, migration, slow implementation of community mental health Program and poverty issues in certain states; more mental health research is needed to meet the growing demands and challenges of a changing modern society of Malaysia.

The HIV MTAC: Association of Drug Adherence and Satisfaction towards Pharmaceutical Care Services
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Introduction: Specialised pharmaceutical care (PC) services such as the Medication Treatment Adherence Clinic (MTAC) play a pivotal role in ensuring strict drug adherence for patients on highly-active anti-retroviral therapy (HAART).

Objective: Our study was conducted to 1) determine the association between adherence and patient satisfaction (PS) and 2) correlate between PS and adherence.

Methodology: Volunteer HAART patients attending the MTAC in Hospital Sultanah Nur Zahirah, Kuala Terengganu were recruited to complete the Malay Modified Morisky Medication
Adherence Scale (MMMAS; mean score = 0-1) and Patient Satisfaction With Pharmaceutical Care Questionnaire (PSPCQ; mean score = 1-5) (higher scores indicating favourable adherence and satisfaction). Data was analysed using SPSS 16, employing descriptive and non-parametric techniques.

**Results:** Participation was received from 70 respondents (mean age = 37.3 years; male = 80.0%; unmarried = 48.6%; ≥ SPM/GCE O-Level qualification = 53.5%; self-employed = 58.6%). Over 85% have been diagnosed with HIV for > 6 months. The overall rating for PS was above average (median = 3.9; range 2.1-5.0) while only 45.7% of respondents were 100% adherent. The highest proportions of “excellent” rating were given to the “staff’s professional attitudes” (32.9%) and “efforts to improve patients’ health” (28.6%). Nonetheless, adherence was not significantly associated with PS level ($\chi^2=0.442; p > 0.05$) and their subscale correlations were poor and insignificant ($r_s = 0.021-0.06; p > 0.05$).

**Conclusion:** Although the MTAC service was generally well-rated, complete HAART adherence was still below 50%. PS with PC services was not significantly related to drug adherence, prompting future explorations into the latter’s direct contributory factors.

**What are the factors related to Anxiety in a sample of Malaysian House Officers?**


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**Introduction:** Anxiety is more prevalent among medical house officers compared to the general population and is known to impair socio-occupational functioning. There is a paucity of data regarding factors related to anxiety amongst Malaysian house officers.

**Objectives:** To screen for significant anxiety and to determine its associated stressors amongst house officers in Universiti Kebangsaan Malaysia Medical Centre (UKMMC).

**Methodology:** This cross-sectional study was conducted amongst 89 house officers in UKMMC from 1st December 2010 to 28th February 2011. Self-rated assessments using a socio-demographic questionnaire, the Depressive Anxiety and Stress Scale 21 (DASS 21; the validated Malay version) screened for significant anxiety symptoms whilst the validated General Stressor Questionnaire (GSQ) identified stressors amongst house officers.

**Results:** The prevalence of significant anxiety symptoms among house officers was 60.7%. Bivariate analysis showed that they were associated with poor relationship with superiors ($p<0.001$), bureaucratic constraints ($p=0.003$), work-family conflicts ($p<0.001$), poor relationship with colleagues ($p=0.001$), performance pressure ($p=0.006$) and poor job prospects ($p=0.004$). Multivariate logistic analysis showed that poor relationship with superiors (OR 4.025, 95%CI 1.049-15.450) and work-family conflicts (OR 8.668, 95%CI 1.532-49.054) were the independent predictors of significant anxiety symptoms.

**Conclusion:** The majority of house officers in this population had significant anxiety symptoms mainly associated with poor relationship with superiors and work-family conflicts. Larger, multi-centre prospective studies focusing on these stressors are recommended to identify potential areas for intervention so as to achieve the ripple effect of psychological wellbeing, quality of work and life.
A Case of Suicide Attempt by Charcoal Burning: complications and management challenges
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Introduction: Charcoal burning emerged as a novel suicide method that spread among Far East Chinese communities via media contagion during the 1990s’ global economic recession. We report a case of suicide attempt by charcoal burning by a Malaysian-Chinese male, highlighting the management challenges involved.

Case presentation: G, a 35-year-old divorced, car salesman, attempted suicide twice within 2 days by burning charcoal. After resuscitation for acute carbon monoxide (CO) poisoning, he was admitted to the psychiatry ward and was diagnosed as Bipolar I Disorder, most recent episode depressed, with psychotic symptoms. He reattempted suicide by trying to drown himself in the ward. Multiple psychosocial stressors included financial problems and interpersonal conflict with fiancée. Initially, he responded partially to a combination of ECT, T. Quetiapine 800 mg OD and T.Fluvoxamine 100 mg OD. Antidepressant was withheld after 1 week due to emergence of subthreshold manic symptoms and T. Sodium Valproate 1000mg was added. After 1 month of treatment, ECT was stopped after 12 doses due to worsening of cognitive deficits (onset after CO poisoning). Antipsychotic was switched to T. Olanzapine 20 mg OD due to exacerbation of psychotic symptoms. Patient also developed parkinsonism (added T. Benxhezol 2 mg tds), urinary and bowel incontinence. During the 2nd month, psychosis and incontinence remitted. His mood improved significantly, and cognitive deficits and parkinsonism were gradually resolving.

Conclusion: This case highlights the complexities of balancing ECT and various psychotropics in a highly suicidal patient in the light of neuropsychiatric complications of CO poisoning.

Profile of Clients attending a Methadone Clinic
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Objective: To obtain a profile of clients of the Methadone Clinic of Hospital Tengku Ampuan Rahimah (HTAR), Klang.

Method: A cross sectional analysis of clients of the Methadone Clinic in HTAR, Klang was undertaken using a 109-item questionnaire designed by the researchers. Subjects were selected by convenience sampling.

Results: Of the 51 patients who responded (Response rate: 66.2%), 80.4% were Malay and the majority were males (88.2%). Mean age and duration of drug abuse in years was 38.8 ± 10.6 and 17.3 ± 7.4 respectively. The majority of patients were married (64.7%), received secondary level education (72.5%) and had an individual monthly income level between RM500–1500 (26.5%). HIV and HEP B/C, and anxiety were the commonly reported comorbid infectious and psychiatric diseases respectively. Friends were cited as the most regular source of drugs (82.4%), the most common being heroine (98%). 72.5% admitted to daily drug abuse while 23.5% admitted to having stolen money to purchase drugs. 92.2% of clients have tried quitting the drugs on their own and 98% stated that the main reason for registering at the Clinic was because they
personally wanted to stop drug dependence. While the majority of patients were satisfied with their current dose, of those who were not, 90% preferred a lower dose.

**Conclusion:** The majority of clients are eager to stop abusing drugs; however their disadvantageous socioeconomic background could prove a hindrance. Increased counseling sessions and job placements could help in ensuring clients receive the full benefits of the Clinic.

**Depression among female patients in Medical wards**
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**Introduction:** Depression is a common psychiatric disorder and numerous studies have found associations between depression and physical illnesses among general hospital in-patients. **Objectives:** This study aims to identify the rate of depression and its severity among female patients in medical wards and to find out the relation between depression and clinical type of medical diagnosis classified by systems of the body. **Methods:** 50 adult female patients were taken from the medical in-patients of Al-Yarmook Teaching Hospital and Al-Numan General Hospital in Baghdad / Iraq over a period of three months. The patients were assessed for the presence of depression by a semi-structured psychiatric interview schedule based on ICD-10 criteria. The severity of depression was rated by Beck depression Inventory. The patients group was matched for age with 50 normal control females to achieve comparability. **Results:** The results showed that the rate of depression in adult female patients in medical wards was 44% which was 1.7 times higher than that among their matched normal control subjects. (P-value <0.05). The majority of the depressed patients group (45.45%) had moderate depression, which was statistically significant. (P-value <0.05). 36.36% of the depressed patients were in the age group (41-50) years, and the majority of the depressed patients were married, housewives, achieved primary school education and having low income. There were no significant differences regarding medical diagnosis classified by system. **Conclusion:** In conclusion, depression is common among female patients in medical wards.

**Breast cancer patients on oncologic treatment at Kuala Lumpur hospital: the caregivers’ psychological profile**
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**Introduction:** Cancer diagnosis not only gravely affects the patients but also their family members thus predisposing the caregivers to myriads of psychosocial challenges. Understanding their profile may help health professionals to identify where support may be needed most. **Objective:** To describe the psychosocial characteristics of the main caregivers of the breast cancer patients undergoing oncologic treatment in Kuala Lumpur Hospital. **Methodology:** A total of 130 caregivers completed self-administered questionnaires on their socio-demographic data, the caregiving factors, the caregivers’ perceived social support (using a locally validated 12-items Multi-dimensional Perceived Social Support Scale) and Depression, Anxiety and Stress Scale (DASS-21) to measure psychological distress, depression and anxiety. **Results:** Almost half of the caregivers were the patients’ spouses (n=61, 46.9%). The mean age
was 42.81±14.48 years old. Majority of the caregivers had secondary education or below (n=92, 70.8%), were employed (n=79, 60.8%) although 61.5% (n=80) of the caregivers received income of less than RM2000.00 per month. In terms of burden of care, two-thirds of the caregivers provided care of more than 20 hours a week (n=85, 65.4%), 61.5% (n=80) have other dependents to care for and half (n=65) of the caregivers lived outside of Klang Valley area. While they perceived their social support as adequate (mean scores of 22.74±4.95, 22.30±4.58 and 20.35±4.79 for domains of ‘Significant Others’, ‘Family’ and ‘Friends’ respectively on MPSSS), about half (49.2%) had significant psychological distress, with 33.9% met the cut-off point for depression, 48.1% for anxiety and 38.9% for stress.

Conclusions: Psychosocial factors including the burden of care and psychological vulnerability of the caregivers needs to be addressed to optimise care of breast cancer patients undergoing oncologic treatment.

Treatment with antipsychotics and the risk of metabolic syndrome in a mental hospital setting
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Objective: The study aimed to measure the prevalence of metabolic syndrome among patients on antipsychotics in a mental hospital setting and to determine if there is any difference in the prevalence of metabolic syndrome among patients receiving typical, atypical and mixed antipsychotics. Finally, it looked at possible predictors in the development of metabolic syndrome among those patients.

Methods: 210 patients treated with any antipsychotic were conveniently sampled in Hospital Permai. 159 patients met our inclusion criteria. Presence of metabolic syndrome was determined by the International Diabetes Federation (IDF) 2005 criteria. Patients’ waist circumference and blood pressure were measured as well as their fasting blood glucose and lipid levels. Patients were divided into typical (N=61), atypical (N=33) and mixed (N=35) antipsychotic groups.

Results: Fifty-seven (35.8%) of the patients fulfilled criteria for metabolic syndrome. The typical group showed the highest prevalence of metabolic syndrome (79.4%), followed by the mixed group (51.4%) and the atypical group (36.3%). Logistic regression failed to show significance of demographic properties, duration of illness, type of antipsychotic, chlorpromazine equivalence of antipsychotics and duration of exposure to antipsychotic at predicting metabolic syndrome.

Conclusion: The prevalence of metabolic syndrome in this setting is comparable to other populations. Prevalence of metabolic syndrome is higher in patients treated with typical antipsychotics although the type of antipsychotic does not predict its development. This study emphasizes the importance of monitoring of metabolic variables and healthy life style modification in all patients on antipsychotics. The main limitation is the cross-sectional design of the study.
Treatment response to Agomelatine in outpatients with depressive disorder: a clinical survey in Malaysia
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Objective: To evaluate the clinical response to agomelatine in outpatients with major depressive disorder in Malaysia.

Methods: Data for this prospective clinical survey was conducted between Oct 2010 and 31st March 2011. A total of 168 outpatients diagnosed with major depressive disorder, whom were prescribed with agomelatine and under routine treatment care were included in this survey. The survey involved 28 psychiatrists who used a clinical interview to diagnose and asked the patients to rate themselves from 0 to 10 on four clinical aspects: feeling better, doing more things during the day, positive change in the quality of sleep and benefits regarding social interactions. The questions were asked at the initiation of agomelatine and repeated at week 1 (by phone call) and at the visits of week 2 and 6. The transaminase levels were sent at the baseline and week 6.

Results: Of the 168 patients, 94 (56%) were female and the mean age was 43.2 years. There was significant improvement at each week from treatment initiation at week 0 for all clinical aspects in both males and females. The transaminase levels were not significantly elevated at week 6.

Conclusions: Patients with major depressive disorder whom were prescribed with agomelatine had significant early clinical improvement starting at week 1 which was sustainable up to week 6.

Understanding the meaning of substance abuse and addiction for college students in Klang Valley
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Objective: In the past five years, the Malaysian government has spent approximately RM15billion on prevention strategies to curb the drug problem in the country. Past research indicates that disparity in understandings of substance abuse and addiction often results in college students not internalizing prevention strategies and instead dissociating themselves from the phenomenon. The current phenomenological study aimed to understand the meaning of substance abuse and addiction (SAA) for Malaysian college students in the urban area.

Methods: Using purposive sampling, six female and three male college students (ages 18 – 25), participated in individual, semi-structured interviews. Interview questions focused on exploring their thoughts and feelings about SAA as well as their attitudes towards those engaging in it. Data was coded using Moustakas’ six-step phenomenological data analysis method.

Results: There appears to be dual understanding in participants’ view of SAA, namely a theoretical (conceptual) versus an experiential understanding. Relating to that, verbalization of personal meanings was seen to bridge these two forms of understanding together. In general, the meaning of ‘addiction’ for these college students carries a more positive tone but many relate being normalized or desensitized to SAA through their college experience. Findings also suggest that personal identification with SAA experience appears to influence participants’ attitudes towards those who engage in SAA. Furthermore, in the process of verbalization of personal meaning, substantial positive shifts in attitude were noted.
Conclusion: The present findings invite rethinking of the construct of SAA, which has implications on future research and intervention strategies of SAA among college students. Limitations of the current study will also be discussed.

Anxiety and Depressive symptoms among Ischaemic Heart Disease patients admitted to Universiti Kebangsaan Malaysia Medical Centre (UKMMC)
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Introduction: Anxiety and depression were known to bring devastating effect on the outcome of patients with ischemic heart disease (IHD). Notwithstanding their high prevalence and catastrophic impact, anxiety and depression were unrecognized and untreated.

Objective: This study was aimed to determine the prevalence of anxiety and depression among IHD patients and the association of this condition with clinical and selected demographic factors.

Methodology: This was a cross-sectional study on one hundred (100) IHD patients admitted to medical ward in UKMMC. Patients diagnosed to have IHD were randomly assessed using Hospital Anxiety and Depression Scale (HADS) and Perceived Social Support (PSS) Questionnaire. Socio-demographic data were obtained by direct interview.

Results: Fifteen percent (15%) of IHD patients in this sample were found to have anxiety, fourteen (14%) were found to have depression while thirty two (32%) were found to have both anxiety and depression. The IHD patients of the middle age group were more likely to develop anxiety than those of older age and the shorter duration of illness the more likely for them to develop anxiety. The other clinical and selected demographic factors such as gender, race, marital status, education level, occupation, co-existing medical illness and social support were not found to be significantly associated with anxiety or depression among IHD patients.

Conclusion: In conclusion, IHD patients of middle age group and shorter duration of illness tend to develop anxiety and it is important to screen young and early stage of illness for appropriate intervention to avert detrimental consequences.

The Experience of Al -Amal Hospital / Jeddah (A.A.H.J)
demAh iAl demAh ,isseEr Mohamed Ayman M K
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Introduction: Al -Amal Hospital / Jeddah (A.A.H.J) has developed a model of integrated Islamic Bio Psycho Social Program in treating drug addiction since 1992 & implement it among the patients.

Objective: The objective of this study was to share this experience which will improve the specialists’ ability in the field of addiction.

Methodology: This program includes a combination of medication and cognitive behavioral therapy (taking care of Islamic scientific religious point of view), in overall therapeutic process. The program often begins with detoxification followed by Psychotherapy that included pharmacotherapy treatment, cognitive behavioral therapy (group & individual ) taking place of
behavioral modification, religious, relapse prevention. Rehabilitation Multi axiaal program and a continuum of care that includes a customized treatment regimen – addressing all aspects of an individual's life including medical and mental health services and follow up options (e.g., family, community – based recovery support systems) as crucial to the patients’ success in achieving and maintaining a drug free lifestyle.

**Results:** Integrative combined program biopsychosocialreligious is highly recommended to treat addiction during detoxification, behavior modification, rehabilitation & relapse prevention stages of recovery.

**Conclusion:** The Experience Of Al-Amal Hospital / Jeddah (A.A.H.J) program in treating drug addiction indicated that Integrative combined program Biopsychosocialreligious is highly recommended to treat addiction during detoxification, behavior modification, rehabilitation & relapse prevention stages of recovery & has a good indicator to solve a complex of addiction illness.