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Depression in the Medically Ill: One Illness, Many Faces and Our Image!

*Umi Adzlin S*
Invited Editorial Member

“Could you please see this poorly controlled diabetic patient who is refusing to take his medications because he does not care and does not want to live anymore?”

“Please come and see this post stroke patient who has been noted to be crying from time to time.”

Those are typical consult requests. A challenging task all the way from making the right diagnosis to selecting appropriate treatment, managing depression in the medically ill is becoming more and more a part of a day’s work for psychiatrists serving in general hospitals.

To begin with, the assessment for a diagnosis in the medically ill differs from the usual assessment due to the overlapping symptoms between depression and the physical illness such as fatigue, loss of appetite and sleep difficulties (1). Sometimes what seemed to be a referral for depression may turn out to be a totally different story. It may just be miscommunication between a patient and the attending doctor or just a normal reaction of illness. It may be something more serious like a hypoactive delirium or a neuropsychiatric manifestation. On top of that, the issues surrounding depression in the medically ill differs from one illness to the other. Managing post-stroke depression is different from managing depression in pregnancy, renal failure, or cancer. What seemed to be a straightforward referral may lead to bigger issues of capacity assessment for an informed consent or an ethical decision of termination of pregnancy. The psychopharmacology of the medically ill differs as it should incorporate sound knowledge on drug-drug interaction, side effects profile and the patients’ physical limitation.

Obviously, this area is a very rich area of research opportunities as well as service development. However, less noticeably, this clinical obligation reflects the image of psychiatry and psychiatrists in the eyes of health professionals. A psychiatrist must demonstrate high competency, good communication skills and the ability to contribute meaningfully for patients’ comprehensive management. The ways we handle referrals may either positively or negatively impact our relationship with our colleagues in other medical disciplines (2). Even for inappropriate referral, we should be able to redirect than merely refuse to see them. We should be able at any time determine what we can do to help the patient and the primary team.

This area of managing depression or other psychiatric aspects of the medically ill is the interface of psychiatry and medicine which is a testing ground for the whole range of our professional skills and abilities. In conclusion, if we do it badly, the bad opinion is towards psychiatry and if we do it well, the credit is to psychiatry!
References


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Offenders with Schizophrenia: Relationship to Psychopathology

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Abstract

Objectives: To study the relationship between psychopathology and characteristics of offenders with schizophrenia. Methods: In this cross sectional study, 70 consecutive offenders with schizophrenia (aged 18-65) admitted to Hospital Bahagia Ulu Kinta within a six-month period were studied. Subjects’ psychopathology was assessed using Positive and Negative Syndrome Scale (PANSS). Results: Offenders against person group received treatment at later age (p=0.043) compared to against property and drug or firearm-related offenders groups. Offenders in drug or firearm-related group had significantly higher PANSS negative scores (p=0.015). Unsound mind at the time of offense was significantly associated with high PANSS positive scores (p=0.011) and offenders against person or property groups (p=0.004). Conclusion: Offenders against person had a significantly later age of treatment and probably onset of illness. Unsoundness of mind was significantly associated with positive symptoms and more frequently reported among offenders against person or property. Offenders in drug or firearm-related group were significantly associated with negative symptoms.

Keywords: Mentally Ill Offender, Schizophrenia, Positive Symptoms, Negative Symptoms, Unsound Mind

Introduction

Forensic psychiatry tends to focus on violent offences against the person, sex offences and substance abuse. This is entirely reasonable as those are the behavioral problems which are more likely to be related to psychiatric disorder. However, to get the matter in perspective it is important to note that such offences account for only a small proportion of crime. Psychiatrists are more likely to deal with violent, sexual and drug offences which account approximately 5% of recognized criminal behavior¹.

Violence among patients with schizophrenia most often occurs during periods of active psychosis. In one study², the majority of violent patients (78%) showed evidence of active psychotic symptoms and 55% were abusing substances at the time of violent incident. Mental disorders are neither necessary, nor sufficient causes of violence. Substance abuse appears to be a major
determinant of violence and this is true whether it occurs in the context of a concurrent mental illness or not. Those with substance disorders are major contributors to community violence, perhaps accounting for as much as a third of self-reported violent acts, and seven out of every 10 crimes of violence among mentally disordered offenders.

According to the criminal law, committing an act that is socially harmful is not the sole criterion of whether a crime has been committed. Before anybody can be convicted of a crime, the prosecution must prove that whether the accused had carried out an unlawful act or omission has occurred and been carried out (actusrea - criminal act) and also had at the time the state of mind proscribed in relation to that crime (mensrea - criminal intent). In its broad sense, mensrea is synonymous with a person’s blameworthiness, or more precisely, those conditions that make a person’s violation sufficiently blameworthy to merit the condemnation of criminal conviction. The defense of insanity is based on the absence of mensrea, or guilty mind and it is depends on the mental state of the accused at the time of committing the act (retrospective diagnosis). In the presence of mental disorder may lessen criminal responsibility or negate it completely in the case of legal insanity.

The purpose of this study was to investigate psychopathology among mental offenders with schizophrenia and to study the relationship between psychopathology and soundness of mind. It was hypothesized that offenders against person and property would be significantly associated with positive symptoms and unsoundness of mind.

### Methods

#### Subject

This was a cross sectional study conducted in Hospital Bahagia Ulu Kinta (HBUK). Built in 1911, HBUK is the oldest mental institution in Malaysia. It is also the largest with over 2,600 beds in 76 wards covering 544 acres of land in Tanjung Rambutan, a suburb of Ipoh. Seventy consecutive offenders with schizophrenia (aged 18-65) whom were admitted under section 342 Criminal Procedure Code (CPC) within a six-month period (December 2009 to May 2010) were recruited. Subjects were excluded if they had mental retardation or severe communication problems. The study was approved by the Research & Ethics Committee, Universiti Sains Malaysia and Ministry of Health, and written informed consent was obtained from all patients after a full explanation of the procedures of the study.

#### Assessment

All mentally ill offenders admitted to the forensic wards and fulfilled the criteria were assessed within the first week of admission. A single researcher (the first author) trained in psychiatric interview and rating scale interviewed all the subjects and administered the test individually.

The Positive and Negative Syndrome Scale (PANSS) scale is a 30-item semi structured clinical interview specifically developed for typological and dimensional assessment of schizophrenia. It has good psychometric properties with coefficients ranging from 0.73 to 0.83 for each of the scale. There are 7 items for PANSS positive scale, 7 items for PANSS negative scale and 16 items for general psychopathology scale. Each items are rated on a 7-point scale (1= absent, 7 extreme). Rating is based upon information related to the past week. Total score for each
group of symptoms were calculated by adding all the scores for the items in each group.

Information about the socio-demographic and clinical characteristic of subjects was collected from the medical record. Subject’s mental soundness at the time of offense was based on the final forensic report. It would be recorded as unsound if the forensic psychiatrist in-charge was in the opinion that the mentally ill offender was insane at the time of the offense. The defence of insanity in Malaysia is contained in section 84 of Penal Code (Revised 1997) Act 574. Section 84 of Penal Code clearly described about the act of a person of unsound mind. In the section, it was stated that ‘nothing is an offence which is done by a person who, at the time of doing it, by reason of unsoundness of mind, is incapable of knowing the nature of the act, or that he is doing what is either wrong or contrary to the law’.

Statistics
All the socio-demographic data and clinical characteristic were coded into categorical data except for age, age of first treatment, duration of treatment, duration of illness, number of hospitalization and number of previous offence. Independent t test was used to compare mean between two groups. One way ANOVA test was used if there were more than two independent groups. Pearson correlation test was used to measure the relationship between two numerical variables. All the analyses were done using PASW Statistics version 18 for Windows.

Results
Most of the subjects were involved in offence against person (n=34, 48.6%) followed by against property (n=22, 31.4%) and drugs-related offence (n=11, 15.7%). Three (4.3%) subjects were charged under Firearm Act. Table 1 details the socio-demographic and clinical characteristics of the subjects according to the type of offence. Malay constituted 52.9% of all subjects which was representative of Malaysian population at 50%. Majority of the subjects were male (97.1%), single (72.9%), unemployed (41.3%), educated up to secondary level (70%), received oral atypical antipsychotics (51.4%), no previous history of offence (72.9%) and were found to have unsound mind at the time offense (64.3%). Drug or firearm-related offenders had significantly more sound mind at the time of offense compared to the other 2 groups (p=0.004). Offenders against person group significantly had later age of first treatment compared to other 2 groups (p=0.043). The rest of the characteristics were not significantly different between the 3 groups of offenders.

| Table 1. Characteristics of all subjects and according to types of offence |
|-------------------------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Gender                                         | All (n=70)      | Against person | Against property | Drug or firearm- | p               |
|                                                | Frequency (%)   | (n=34) Frequency (%) | (n=22) Frequency (%) | related (n=14) Frequency (%) |               |
| Male                                           | 68(97.1)        | 32 (94.1)       | 22 (100.0)       | 14 (100.0)       | 0.690†          |
| Female                                         | 2(2.9)          | 2 (5.9)         | 0                | 0               |                 |
| Ethnic                                         |                |                 |                 |                 |                 |
| Malay                                          | 37 (52.9)       | 20 (58.8)       | 10 (45.5)        | 7 (50.0)         | 0.471†          |
| Chinese                                        | 21 (30.0)       | 11 (32.4)       | 6 (27.3)         | 4 (28.6)         |                 |
| Others                                         | 12 (17.1)       | 3 (8.8)         | 6 (27.3)         | 3 (21.4)         |                 |
| Marital status                                 |                |                 |                 |                 |                 |
| Married                                        | 6(8.6)          | 4 (11.8)        | 1 (4.5)          | 1 (7.1)          | 0.566†          |
| Divorced                                       | 13(18.6)        | 4 (11.8)        | 5 (22.7)         | 4 (28.6)         |                 |
| Single                                         | 51(72.9)        | 26 (76.5)       | 16 (72.7)        | 9 (64.3)         |                 |
Table 2 details the relationship of subjects' characteristics with psychopathology. Drug or firearm-related offenders significantly scored higher in PANSS negative subscale compared to the other 2 groups (p=0.015). Unsound mind at the time of offence was significantly associated with higher scores in PANSS positive scores (p=0.011). Other characteristics were not significantly associated with PANSS as shown in Table 3.

Table 2. Association with Psychopathology

<table>
<thead>
<tr>
<th>Total PANSS</th>
<th>Positive PANSS</th>
<th>Negative PANSS</th>
<th>General PANSS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean (SD)</td>
<td>Mean (SD)</td>
<td>Mean (SD)</td>
<td>Mean (SD)</td>
</tr>
<tr>
<td>p</td>
<td>p</td>
<td>p</td>
<td>p</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>74.69 (12.15)</td>
<td>0.895*</td>
<td>18.31 (4.19)</td>
</tr>
<tr>
<td>Female</td>
<td>73.50 (28.99)</td>
<td>17.50 (6.36)</td>
<td>14.00 (8.49)</td>
</tr>
<tr>
<td>Ethic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Malay</td>
<td>74.95 (11.66)</td>
<td>0.742†</td>
<td>18.86 (4.20)</td>
</tr>
<tr>
<td>Chinese</td>
<td>75.57 (15.60)</td>
<td>17.52 (4.69)</td>
<td>16.71 (6.06)</td>
</tr>
<tr>
<td>Others</td>
<td>72.17 (8.94)</td>
<td>17.83 (3.22)</td>
<td>14.25 (4.50)</td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>67.33 (8.12)</td>
<td>0.298‡</td>
<td>20.00 (4.56)</td>
</tr>
<tr>
<td>Divorced</td>
<td>76.69 (14.04)</td>
<td>18.69 (3.57)</td>
<td>15.23 (6.87)</td>
</tr>
<tr>
<td>Single</td>
<td>75.00 (12.38)</td>
<td>17.98 (4.32)</td>
<td>16.14 (5.40)</td>
</tr>
<tr>
<td>Employment status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full time</td>
<td>72.46 (9.50)</td>
<td>0.607†</td>
<td>18.43 (4.52)</td>
</tr>
<tr>
<td>Part time</td>
<td>73.38 (12.31)</td>
<td>18.79 (4.44)</td>
<td>14.58 (5.38)</td>
</tr>
<tr>
<td>Unemployed</td>
<td>75.86 (14.03)</td>
<td>17.52 (3.99)</td>
<td>16.83 (5.93)</td>
</tr>
<tr>
<td>Other</td>
<td>80.75 (11.03)</td>
<td>20.50 (3.11)</td>
<td>15.75 (8.26)</td>
</tr>
<tr>
<td>Educational level</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nil</td>
<td>77.50 (14.39)</td>
<td>0.279‡</td>
<td>20.50 (3.11)</td>
</tr>
<tr>
<td>Primary</td>
<td>78.73 (11.13)</td>
<td>19.80 (3.78)</td>
<td>15.93 (5.34)</td>
</tr>
<tr>
<td>Secondary</td>
<td>73.65 (12.57)</td>
<td>17.65 (4.24)</td>
<td>15.55 (5.99)</td>
</tr>
<tr>
<td>Tertiary</td>
<td>63.00 (14.14)</td>
<td>18.00 (7.07)</td>
<td>10.00 (2.83)</td>
</tr>
<tr>
<td>Route of AP</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oral</td>
<td>74.11 (12.37)</td>
<td>0.523*</td>
<td>18.28 (4.23)</td>
</tr>
<tr>
<td>Depot</td>
<td>76.35 (13.03)</td>
<td>18.29 (4.22)</td>
<td>16.59 (6.27)</td>
</tr>
<tr>
<td>Type of AP</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Typical</td>
<td>77.82 (16.32)</td>
<td>0.272†</td>
<td>18.76 (5.07)</td>
</tr>
<tr>
<td>Atypical</td>
<td>72.36 (9.79)</td>
<td>18.06 (3.83)</td>
<td>14.75 (5.02)</td>
</tr>
</tbody>
</table>


Table 3. Correlation between Characteristic of Subjects with Psychopathology

<table>
<thead>
<tr>
<th></th>
<th>Total PANSS</th>
<th>Positive PANSS</th>
<th>Negative PANSS</th>
<th>General PANSS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>0.642</td>
<td>0.963</td>
<td>0.614</td>
<td>0.603</td>
</tr>
<tr>
<td>Age of first treatment</td>
<td>0.875</td>
<td>0.356</td>
<td>0.775</td>
<td>0.931</td>
</tr>
<tr>
<td>Duration of treatment</td>
<td>0.832</td>
<td>0.299</td>
<td>0.346</td>
<td>0.758</td>
</tr>
<tr>
<td>Duration of illness</td>
<td>0.424</td>
<td>0.741</td>
<td>0.266</td>
<td>0.396</td>
</tr>
<tr>
<td>Number of hospitalization</td>
<td>0.955</td>
<td>0.319</td>
<td>0.292</td>
<td>0.657</td>
</tr>
<tr>
<td>No of previous offence</td>
<td>0.865</td>
<td>0.626</td>
<td>0.956</td>
<td>0.913</td>
</tr>
</tbody>
</table>

Discussion

The socio-demographic and clinical characteristic of the 3 groups of offenders with schizophrenia were similar except for a few significant differences. Firstly, this study found offenders against person received treatment at a significantly later age when compared to other groups, even though the age, duration of treatment, duration of illness and number of hospitalization were similar. Offenders against person had probably a later onset of illness which can be associated with a higher chance of having schizophrenia of paranoid subtype.

Secondly, unsound mind at the time of offense was significantly associated with positive symptoms but not with negative symptoms or general psychopathology. In other word, presence of positive symptoms in the first week of admission during which the assessment was made significantly associated with the final forensic report that the offender was of unsound mind during the alleged offense.

Unsound mind at the time of offense was also significantly more often among offenders against person (67.6%) and property (81.8%) compared to substance or firearm-related group (28.6%). More than two thirds (67.6%) of offenders against person had unsound mind at the time of offense which suggest positive symptoms such as commanding hallucinations and persecutory delusions may play an important role in violent offending against person. However, no significant association between offense against person with positive symptoms or unsound mind at the time of offense was found in this study. Nevertheless, it is important to control the positive symptoms (particularly delusion, hostility and hallucinatory behaviour) in the long-term management of those mental offenders as they were significantly correlated with the amount of burden experienced by caregivers.

Thirdly, higher negative symptoms were significantly associated with offenders in drug or firearm-related group. It was highly probable that the offenders themselves were drug users and if it was used as self medication, it may be aimed particularly toward alleviating negative symptoms such
as social impairment and cognitive deficits. Negative symptoms are associated with reduced verbal working memory and amphetamine has shown to improve working memory accuracy in schizophrenia. By the time of forensic assessment, the drug effects probably have worn off and the subjects were at their baseline negative symptoms. Consistent with finding that amphetamine modestly improved negative symptoms only in patients with schizophrenia in whom this symptomatology was more severe.

In conclusion, unsoundness of mind was significantly associated with positive symptoms and violent offenses against person or property. Negative symptoms were significantly more among drug or firearm-related offenders suggesting its use as self-medication.

References


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ORIGINAL PAPER

HRQoL Profile And Psychometric Properties Assessment Of Caregiver Quality Of Life Instrument Among HIV/AIDS Family Caregivers In Terengganu

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Abstract

Objective: This preliminary investigation intended to evaluate the health-related quality of life (HRQoL) profile of HIV/AIDS family caregivers residing in Kuala Terengganu, Malaysia and to explore the psychometric properties of the Malay Caregiver Quality of Life (MCQoL) questionnaire in this sample. Methods: A convenient sample of family caregivers of HIV/AIDS patients who were aware of the diagnosis was enrolled. They were recruited from the Infectious Disease Clinic, Hospital Sultanah Nur Zahirah, Terengganu. Data was analysed using SPSS16 employing descriptive and non-parametric statistical methods. Results: Thirty respondents consented participation [median age = 43.0 years (range 19.0-81.0); female = 63.3%, married = 70.0%; ≤ primary school qualification = 46.7%; self-employed = 66.7% and rural residents = 56.7%]. Across all patients, the highest domain score was for Disruptiveness (median = 3.3; range 1.4-4.0) while Burden was the lowest (median = 2.3; range 1.0-3.6). As expected, males reported significantly better Financial Concerns and Burden (p<0.05). Interestingly, females and unmarried caregivers exhibited significantly worse quality of sleep compared to their counterparts. However, no significant HRQoL difference was demonstrated among respondents by various education level, living area and duration of care giving. Overall, the instrument tested exhibited evidence of favourable psychometric properties among HIV/AIDS caregivers. Conclusion: In view of such findings, further exploratory studies are required to develop effective and practical interventions which could assist in improving the caregivers’ HRQoL. Besides, the Malay CQoL instrument was considered valid and reliable for this current population but more studies in bigger samples are required to re-confirm its properties.

Keywords: HIV/AIDS, Family Caregivers, Health-Related Quality of Life
Introduction

The introduction of antiretroviral medications has importantly decreased the mortality rate and extended the lives of HIV-positive individuals. This has changed the nature of HIV/AIDS care giving from a short-term acute situation to long term care, thus making the role of caregivers even more demanding. Caregivers commonly spend a substantial amount of time interacting with patients in the process of care within a wide range of activities. They usually assist with many activities such as housekeeping, personal hygiene, meal preparation, medical care, transportation, financial and moral support.

As the person with AIDS is vulnerable to many physiological, social and emotional affronts, the caregiver may also face numerous battles in his or her effort to remain effective in the delivery of care. Often, they experience hurdles from psychological, social and interpersonal relationship aspects including loss of job, fear of infection transmission, and social stigma related with HIV/AIDS such as financial constraints and being abandoned. Within the context of families living with HIV, multiple factors contribute to caregiver burden. First, care giving usually comes as an unexpected role, they neither were socialized nor adequately prepared. In order to assume this new role, caregivers must restructure pre-existing role obligations and activities to suit with caring for patients living with HIV/AIDS (PLWHA). Progressive increase in the caregivers’ responsibilities over the course of caring require further adjustments in family and work commitments. The physical demands of care giving also contribute significantly to burden. Besides, those who never cared for a seriously ill person must quickly learn the basic skills, often under extremely stressful condition and emotional turmoil.

Over the past decades, majority of the health-related quality of life (HRQoL) studies had focused on family caregivers in the United States and Africa. Hence we only know little about the situation in Malaysia particularly in the East Coast region of Peninsular Malaysia. This study intended to evaluate the HRQoL profile of HIV/AIDS family caregivers residing in Kuala Terengganu, Malaysia as well as to explore the psychometric properties of the Malay Caregiver Quality of Life (MCQoL) questionnaire in this sample.

Methods

Research design and sample selection

This study was based on a preliminary, cross-sectional design. Thirty participants were recruited into this study. A purposive convenience sampling approach was performed to recruit caregivers who met the following inclusion criteria: (i) identified as the primary family caregiver. Family caregivers were defined as family member or members who provide unpaid care to a loved one with a chronic condition; (ii) family caregivers who had at least three months experience caring for their HIV-infected family members, assuming that in this period they would have already been familiar with their responsibilities; and (iii) agreed to participate in the study.

Ethical approval

Ethical approval was first obtained from the Medical Research and Ethics Committee of the Ministry of Health, Malaysia (reference: NMRR-12-510-10824) via online application. Prior to that, the hospital authority was verbally contacted to explain the intention of the study, the period involved and what was required from the
caregivers and hospital staff. Additional discussions were held with the hospital director, the head of Infectious Disease Clinic and the appointed study coordinator(s) for the purpose of arranging the date and time of the day(s) suitable for caregivers enrolment.

**Instruments**

**Personal Information Form**
The form includes common demographic characteristics; gender, age, area of living, formal residence, salary, marital status, race, religion, highest education level, occupation, smoking and alcohol consumption habits, duration since diagnosis, source of infection and current treatment/medication.

**Caregiver Quality of Life (CQoL)**
It consists of a total of 35 items assessing burden (10 items), disruptiveness (7 items), positive adaptation (7 items) and financial concerns (3 items) and eight single items to additional factors (disruption of sleep, satisfaction with sexual functioning, day-to-day focus, mental strain, informed about illness, protection of patient, management of patient’s pain and family interest in care giving. Each question is scored on Likert-type response that ranged from 0 (not at all), 1 (a little bit), 2 (somewhat), 3 (quite a bit) and 4 (very much). For all items and domains that measure HRQoL, a higher score represented a better HRQoL. Previously, CQoL has been used in breast cancer population worldwide.

Initially, the original English CQoL was translated into Malay (forward translation) by a bilingual translator who was a Malay native speaker. Subsequently, the Malay version was back-translated into English by another bilingual translator. Later, reconciliation of both translations was performed by three researchers. Further discussions and modifications were carried out by the researchers based on the forward and back translations before generating the final Malay version of CQoL.

**Malay Caregiver Quality of Life (MCQoL) Applicability And Practicality Form**
This form was created for the evaluation of applicability and practicality of the MCQoL. It consists of five items which asked about the duration to complete the questionnaire (item 1), clarity and patient understanding (item 2), comprehensiveness (items 3 and 4) and the last item was related to spontaneous responding. All items were open-ended except for item 2 (response categories: “very unclear”, “not clear”, “clear”, or “very clear”) and item 3 (answered as “yes” or “no”).

**Procedure**
Data collection was carried out between April and June 2012. Family caregivers were recruited from the Infectious Disease Clinic, Hospital Sultanah Nur Zahirah, Terengganu, Malaysia.

A month before the study commenced, the staff nurses and researchers identified a list of patients on regular follow-up whose caregivers were aware about their disease. Explanations on the study were then delivered to patients and they were requested (verbally) to bring their corresponding family caregivers to the Infectious Disease Clinic to participate in the interview at the next patient’s appointment.

On the actual study day (subsequent patient’s appointment), all eligible family caregivers who visited the Infectious Disease Clinic were approached at the registration counter and invited to participate. Verbal explanation on this study was delivered based on a structured Information Sheet. Once they agreed,
participants signed a written consent form before proceeding to complete the set of instruments in this order: Personal Information Form, Malay version of Caregiver Quality of Life and Malay Caregiver Quality of Life (CQoL) Applicability And Practicality Form. Upon completion, the questionnaires were submitted to either the researcher or research assistant. The entire time taken to complete the form and questionnaire was also recorded using a stop watch. Once the family caregivers managed to complete the whole procedure, they were presented with a token of appreciation each.

Analysis

This study utilised the Statistical Package for Social Sciences Version 16 (SPSS) for the purpose of statistical analysis of the data. All sociodemographic data were evaluated descriptively, and presented as frequencies and percentages. General HRQoL profile was initially presented descriptively in the form of median and interquartile range. Non-parametric Mann-Whitney U test was subsequently utilised to test for group score comparisons for HRQoL profile based on sociodemographic variables (presented in the form of mean rank and p value). A value of p < 0.05 was considered statistically significant.

Descriptive statistics were also utilised to present results for the applicability and practicality part of the study. For reliability purposes, internal consistency reliability was assessed via calculation of Cronbach’s alpha and the value of 0.70 and above was considered acceptable. In the context of psychometric validation, Spearman’s rank correlation coefficient ($r_s$) was used to examine the strength of the associations. The value of a correlation coefficient greater than 0.40 between an item and its own domain is regarded as an adequate evidence of convergent validity. On the other hand, divergent validity was confirmed when an item correlated weakly with other domains than its own domain or it refers to a correlation coefficient of lesser than 0.40.

Results

Applicability and Practicality of Malay Caregiver Quality of Life (MCQoL) instrument

The average time required to complete the Malay CQoL was 9.8 minutes (range = 8 – 12 minutes). The majority of the patients considered the questions and instructions to be “clear” (n = 26, 86.7%) and “very clear” (n = 3, 10.0%) respectively. Only one patient stated that the items were “not clear”. A total of 23 respondents (76.7%) thought that MCQoL was comprehensive. Seven patients suggested that this instrument should include aspects on physical problem. All patients had written their comments in the open-ended questions (100.0%) which have mostly mentioned about their difficulties to complete item 7 (Financial Concerns) because they could not afford any insurance coverage. Some of the caregivers also found that item 9 (sexual function) was not significant due to their marital status of being either single or widowed/divorced.

Reliability and Validity of the Malay Caregiver Quality of Life (MCQoL) instrument

Overall, the internal consistency reliability (expressed as Cronbach’s alpha) for all domains emerged as high (0.78 – 0.84) whereby: Disruptiveness (7 items – 0.83), Burden (10 items – 0.84), Positive Adaptation (7 items – 0.78) except for the domain on Financial Concerns (3 items – 0.43) – Table 1. Item number 7 in domain Financial Concerns, “I am concerned about our insurance coverage” was identified as
‘problematic’ because most of the respondents could not afford to buy any insurance coverage, hence 90% of the respondents did not respond to this item. As a result, this item was deleted due to missing responses and a new Cronbach’s alpha value for domain *Financial Concerns* is 0.73.

Table 1. Cronbach’s alpha coefficient for MCQoL

<table>
<thead>
<tr>
<th>Domain</th>
<th>Cronbach’s alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disruptiveness</td>
<td>0.83</td>
</tr>
<tr>
<td>Financial Concerns</td>
<td>0.43</td>
</tr>
<tr>
<td></td>
<td>(0.73 after deletion of item 7)</td>
</tr>
<tr>
<td>Burden</td>
<td>0.84</td>
</tr>
<tr>
<td>Positive Adaptation</td>
<td>0.78</td>
</tr>
</tbody>
</table>

In addition, all individual items in this MCQoL correlated (corrected for overlap) stronger within their respective domains compared to other domains ($r_s \geq 0.40$) except for the three items in the *Positive Adaptation, Burden* and *Disruptiveness* (item 16, 20 and 21). These findings demonstrated convergent validity. Subsequently, most items in dissimilar domains correlated either weakly ($r_s = 0.02 - 0.29$) or moderately ($r_s = 0.30 - 0.39$) with each other, confirming divergent validity.

Patient Demographic Characteristics

A total of 30 Malay Muslim respondents, with 100% response rate, participated in this study. Nineteen respondents were female (63.3%) while eleven others were male (36.7%). They were on average 43 years old (ranged 18-81 years). Most of the participants had attended either primary or secondary school. The majority identified themselves as self-employed (66.7%) and were earning not more than RM1000. In terms of their relationship to PLWHA, most were either mothers or wives to the patients. Additional details are provided in Table 2.

Table 2. Sociodemographic characteristics of the participants

<table>
<thead>
<tr>
<th>Variable</th>
<th>No. of respondents</th>
<th>Percentages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>11</td>
<td>36.7</td>
</tr>
<tr>
<td>Female</td>
<td>19</td>
<td>63.3</td>
</tr>
<tr>
<td>Age (years)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18 – 28</td>
<td>7</td>
<td>23.3</td>
</tr>
<tr>
<td>29 – 38</td>
<td>6</td>
<td>20.0</td>
</tr>
<tr>
<td>39 – 48</td>
<td>10</td>
<td>33.3</td>
</tr>
<tr>
<td>≥ 49</td>
<td>7</td>
<td>23.3</td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>21</td>
<td>70.0</td>
</tr>
<tr>
<td>Single</td>
<td>5</td>
<td>16.7</td>
</tr>
<tr>
<td>Widowed / Divorced</td>
<td>4</td>
<td>13.3</td>
</tr>
</tbody>
</table>
### Living area

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban</td>
<td>13</td>
<td>43.3</td>
</tr>
<tr>
<td>Rural</td>
<td>17</td>
<td>56.7</td>
</tr>
</tbody>
</table>

### Duration of care

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<table>
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<tr>
<th></th>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>≤ 12 months</td>
<td>15</td>
<td>50.0</td>
</tr>
<tr>
<td>&gt; 12 months</td>
<td>15</td>
<td>50.0</td>
</tr>
</tbody>
</table>

### Level of education

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree</td>
<td>1</td>
<td>3.3</td>
</tr>
<tr>
<td>Diploma</td>
<td>1</td>
<td>3.3</td>
</tr>
<tr>
<td>Primary school</td>
<td>12</td>
<td>40.0</td>
</tr>
<tr>
<td>Secondary school</td>
<td>14</td>
<td>46.7</td>
</tr>
<tr>
<td>No formal education</td>
<td>2</td>
<td>6.7</td>
</tr>
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</table>

### Occupation

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-employed</td>
<td>17</td>
<td>56.7</td>
</tr>
<tr>
<td>Housewife</td>
<td>5</td>
<td>16.7</td>
</tr>
<tr>
<td>Unemployed</td>
<td>3</td>
<td>10.0</td>
</tr>
<tr>
<td>Pensioner</td>
<td>2</td>
<td>6.7</td>
</tr>
<tr>
<td>Support group</td>
<td>3</td>
<td>10.0</td>
</tr>
</tbody>
</table>

### Monthly income

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; RM500</td>
<td>9</td>
<td>30.0</td>
</tr>
<tr>
<td>RM501 – RM1000</td>
<td>11</td>
<td>36.7</td>
</tr>
<tr>
<td>RM1001 – RM1500</td>
<td>1</td>
<td>3.3</td>
</tr>
<tr>
<td>RM1501 – RM2000</td>
<td>2</td>
<td>6.7</td>
</tr>
<tr>
<td>RM2001 – RM2500</td>
<td>1</td>
<td>3.3</td>
</tr>
<tr>
<td>No income</td>
<td>6</td>
<td>20.0</td>
</tr>
</tbody>
</table>

### Relationship to PLWHA

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Father</td>
<td>3</td>
<td>10.0</td>
</tr>
<tr>
<td>Mother</td>
<td>9</td>
<td>30.0</td>
</tr>
<tr>
<td>Wife</td>
<td>7</td>
<td>23.3</td>
</tr>
<tr>
<td>Husband</td>
<td>4</td>
<td>13.3</td>
</tr>
<tr>
<td>Brother</td>
<td>4</td>
<td>13.3</td>
</tr>
<tr>
<td>Sister</td>
<td>2</td>
<td>6.7</td>
</tr>
<tr>
<td>Daughter</td>
<td>1</td>
<td>3.3</td>
</tr>
</tbody>
</table>

### General HRQoL status

The median and interquartile range scores of HRQoL subscales are depicted in Table 3. Across all patients, the highest domain score was for *Disruptiveness* (median = 3.3; range 1.4-4.0) followed by *Financial Concerns* (median = 2.50; range 0.0-4.0) and *Positive Adaptation* (median = 2.43; range 1.1-4.0), while *Burden* emerged as the poorest domain (median = 2.3; range 1.0-3.6).
### Table 3. General HRQoL profile (n=30)

<table>
<thead>
<tr>
<th>Domains</th>
<th>General HRQoL profile</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Median (min, max)</td>
<td>Interquartile Range</td>
<td></td>
</tr>
<tr>
<td>Disruptiveness</td>
<td>3.29 (1.4 – 4.0)</td>
<td>0.79</td>
<td></td>
</tr>
<tr>
<td>Financial Concerns</td>
<td>2.50 (0.0 – 4.0)</td>
<td>1.25</td>
<td></td>
</tr>
<tr>
<td>Burden (psychological)</td>
<td>2.25 (1.0 – 3.6)</td>
<td>1.15</td>
<td></td>
</tr>
<tr>
<td>Positive Adaptation</td>
<td>2.43 (1.1 – 4.0)</td>
<td>0.71</td>
<td></td>
</tr>
</tbody>
</table>

**Comparison HRQoL status based on gender and marital status**

As expected, males reported significantly better *Financial Concerns* and *Burden* compared to females (p<0.05) – Table 4. Additionally, males and married caregivers exhibited significantly better quality of sleep compared to their counterparts (p<0.05) – Table 4.

### Table 4. Differences in HRQoL scores based on gender and marital status (n=30)

<table>
<thead>
<tr>
<th>HRQoL Domain</th>
<th>Mean Rank (median)</th>
<th>Gender</th>
<th>Marital Status</th>
<th>p value*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>19.09</td>
<td>13.42</td>
<td>0.087</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(3.43)</td>
<td>(3.14)</td>
<td>(3.29)</td>
<td></td>
</tr>
<tr>
<td>Disruptiveness</td>
<td>22.50</td>
<td>11.45</td>
<td>0.001*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(3.50)</td>
<td>(2.00)</td>
<td>(2.50)</td>
<td></td>
</tr>
<tr>
<td>Financial Concerns</td>
<td>20.64</td>
<td>12.53</td>
<td>0.015*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(3.10)</td>
<td>(1.90)</td>
<td>(2.00)</td>
<td></td>
</tr>
<tr>
<td>Burden</td>
<td>15.32</td>
<td>15.61</td>
<td>0.931</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(2.57)</td>
<td>(2.57)</td>
<td>(2.57)</td>
<td></td>
</tr>
<tr>
<td>Positive Adaptation</td>
<td>17.05</td>
<td>14.61</td>
<td>0.447</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(3.00)</td>
<td>(2.00)</td>
<td>(2.00)</td>
<td></td>
</tr>
<tr>
<td>Sleep</td>
<td>20.82</td>
<td>12.42</td>
<td>0.007*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(4.00)</td>
<td>(3.00)</td>
<td>(3.00)</td>
<td></td>
</tr>
<tr>
<td>Disruption #</td>
<td>11.33</td>
<td>11.62</td>
<td>0.917</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1.00)</td>
<td>(1.00)</td>
<td>(1.00)</td>
<td>(†)</td>
</tr>
<tr>
<td>Sexual Functioning</td>
<td>17.05</td>
<td>14.61</td>
<td>0.447</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(3.00)</td>
<td>(2.00)</td>
<td>(2.00)</td>
<td>(3.00)</td>
</tr>
<tr>
<td>Daily Focus #</td>
<td>19.41</td>
<td>13.24</td>
<td>0.053</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(4.00)</td>
<td>(2.00)</td>
<td>(2.00)</td>
<td>(3.00)</td>
</tr>
<tr>
<td>Mental Strain #</td>
<td>12.64</td>
<td>17.16</td>
<td>0.155</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(2.00)</td>
<td>(3.00)</td>
<td>(3.00)</td>
<td></td>
</tr>
<tr>
<td>Disease Information</td>
<td>18.55</td>
<td>13.74</td>
<td>0.115</td>
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<tr>
<td></td>
<td>(4.00)</td>
<td>(3.00)</td>
<td>(3.00)</td>
<td></td>
</tr>
<tr>
<td>Patient Protection</td>
<td>18.09</td>
<td>14.00</td>
<td>0.190</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(4.00)</td>
<td>(3.00)</td>
<td>(3.00)</td>
<td></td>
</tr>
<tr>
<td>Pain</td>
<td>15.05</td>
<td>15.76</td>
<td>0.817</td>
<td></td>
</tr>
<tr>
<td>Management #</td>
<td>(3.00)</td>
<td>(4.00)</td>
<td>(3.00)</td>
<td></td>
</tr>
<tr>
<td>Family’s Interest</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Comparison HRQoL status based on education level, living area and duration of care giving

The results have also demonstrated the absence of any significant difference among caregivers by education level, living area and duration of care giving – Table 5. However, caregivers who received education until primary school and have been involved in care giving activity for at least 12 months showed relatively better HRQoL status. Meanwhile, different living area did not pose any difference in HRQoL profile among caregivers.

Table 5. Differences in HRQoL scores based on education level, living area and duration of care giving (n=30)

<table>
<thead>
<tr>
<th>HRQoL Domain</th>
<th>Education Level</th>
<th>Mean Rank (median)</th>
<th>Living Area</th>
<th>Duration of Care Giving</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Primary and</td>
<td>p value*</td>
<td>Urban</td>
<td>Rural</td>
</tr>
<tr>
<td></td>
<td>&gt;Primary school</td>
<td></td>
<td>p value*</td>
<td></td>
</tr>
<tr>
<td>Disruptiveness</td>
<td>16.64</td>
<td>0.503</td>
<td>17.54</td>
<td>13.94</td>
</tr>
<tr>
<td></td>
<td>(3.14)</td>
<td>(3.29)</td>
<td>(3.29)</td>
<td>(3.00)</td>
</tr>
<tr>
<td>Financial</td>
<td>16.18</td>
<td>0.690</td>
<td>16.31</td>
<td>14.88</td>
</tr>
<tr>
<td>Concerns</td>
<td>(2.50)</td>
<td>(2.50)</td>
<td>(2.50)</td>
<td>(2.50)</td>
</tr>
<tr>
<td>Burden</td>
<td>17.82</td>
<td>0.176</td>
<td>15.00</td>
<td>15.88</td>
</tr>
<tr>
<td></td>
<td>(2.60)</td>
<td>(2.00)</td>
<td>(2.30)</td>
<td>(2.00)</td>
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<tr>
<td>Positive</td>
<td>15.25</td>
<td>0.884</td>
<td>14.15</td>
<td>16.53</td>
</tr>
<tr>
<td>Adaptation</td>
<td>(2.57)</td>
<td>(2.29)</td>
<td>(2.57)</td>
<td>(2.57)</td>
</tr>
<tr>
<td>Sleep</td>
<td>15.93</td>
<td>0.791</td>
<td>16.54</td>
<td>14.71</td>
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<td>Disruption #</td>
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<td>(3.00)</td>
<td>(3.00)</td>
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</tr>
<tr>
<td>Sexual</td>
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<td>(1.00)</td>
<td>(1.00)</td>
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<td>(3.00)</td>
<td>(3.00)</td>
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<td>Pain</td>
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<td>0.363</td>
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<td>16.38</td>
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<td>(3.00)</td>
<td>(4.00)</td>
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<tr>
<td>Family’s Interest #</td>
<td>15.46</td>
<td>0.982</td>
<td>16.65</td>
<td>14.62</td>
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<td></td>
<td>(3.00)</td>
<td>(3.00)</td>
<td>(3.00)</td>
<td>(4.00)</td>
</tr>
</tbody>
</table>

* Mann-Whitney U test; p < 0.05 = significant.
# Stand-alone question
With regard to general HRQoL status, caregivers were most negatively affected by Burden. According to Pallangyo & Meyers, caregiver burden is a multidimensional phenomenon reflecting the physical, emotional, social and environmental consequences of caring for an impaired family member. Consistent with present finding, numerous worldwide studies have documented significant care giving burden experienced by the caregivers when providing care and support to care recipients. A previous study conducted by Roth et al. showed that psychological and social indices of QoL indicate prevalent problems among family caregivers who experienced high strain from their care giving responsibilities. Moreover, a study conducted in Thailand also reported over 66% of the caregivers experiencing moderate to severe burden. Similarly, another study conducted among Irish had also documented highly-burdened caregivers experiencing lower QoL than less-burdened caregivers.

As expected, females reported significantly worse Financial Concerns and burden. In this cohort, 45% of female caregivers were either unemployed or were housewives. Even worse, more than 50% amongst the employed female caregivers were earning less than RM500 per month. Given the multiple demands of care giving (such as cleaning, bathing, administering medication, laundering, shopping), coupled with limited financial sources, it was understandable that female caregivers were faced with overwhelming stress level that predictably pushed the boundaries of human emotional capabilities. Turner and Catania explained that family caregivers with financial difficulties could experience more distress and burden compared to their counterparts.

Furthermore, caregivers who were unemployed or have low incomes may experience more distress because they might have fewer resources to meet care demands while financial concerns could cause particular distress for caregivers during long treatment periods as their resources become more depleted.

Additionally, females and unmarried caregivers exhibited significantly worse quality of sleep compared to their counterparts. A study in Spain revealed that the most affected activity of caregivers was sleeping with 77% feeling more tired due to high frequency of care giving activities. Several studies have also documented that female caregivers caring for patients with other illnesses also experienced low quality of sleep. A study on women primary caregivers of Alzheimer disease patients at home also reported poor quality of sleep and this was negatively affected by more hours of caring but positively affected by employment outside home. Among the caregivers of Parkinson’s disease patients, poor sleep quality was frequent and significantly linked to poor HRQoL and depressive symptoms. Since the quality and quantity of sleep may affect health and QoL, appropriate management of caregivers’ sleep disturbances is important as it may lead to a better maintenance of caregiver quality of life and enhancing their ability to care for patients.

Although no significant HRQoL difference was exhibited among caregivers by education level, living area and duration of care giving, caregivers who received education until primary school showed better HRQoL status. This was in contrast with other studies which demonstrated more highly educated caregivers tended to have better QoL because the accompanying better jobs and high salaries enabled them to use
their financial and social resources to ease their care giving burdens [29-30]. On the other hand, a study by Thomas [31] showed that long term duties of caring imposed significant physical and psychological well-being of the carers, thus resulting in decreased QoL. This was corroborated with the present finding whereby caregivers who have been involved in care giving activity of less than 12 months demonstrated better HRQoL profile than their counterparts. Meanwhile, different living area did not influence HRQoL status among caregivers which was supported by similar findings in other studies [32-33].

As expected, female caregivers were reported to play a major role to care for PLWHA compared to their male counterparts. This was because nurturing and caring role was traditionally and culturally regarded as women’s responsibilities for their spouses and children [34]. Not surprisingly, studies on family care giving in other HIV-related studies have also been focused on female family caregivers [24, 35].

Overall, the instrument tested in this study encouragingly exhibited evidence of favourable psychometric properties among HIV/AIDS caregivers. To the majority of them, the Malay CQoL was not difficult to complete as only minimal time was needed. The result strongly supported the usage of the instrument particularly in HIV/AIDS caregivers. The clarity, comprehensiveness and suitability of the constructs of the instrument were all supported by the majority of patients (> 70%). These results also showed that Malay CQoL was indeed acceptable and applicable in HIV/AIDS caregivers. Furthermore, evidence of good reliability was additionally detected. The findings of the reliability tests surpassed the Cronbach’s alpha coefficient threshold of 0.70 [15, 17]. Within MCQoL itself, the individual items produced strong correlations with their own domain compared to other domains and these results clearly demonstrated convergent validity. The relatively weak relationships between items in dissimilar domains showed further evidence of divergent validity of this instrument.

As with all studies, there are some limitations in this study. First, all the study’s participants were coincidentally Malay Muslim although there was no intention to exclude participants from other races and religions. This might be due to the Muslims in Terengganu accounting for over 95% of the population [36]. Second, the study was based on a convenience sample; thus the overall findings may not truly represent all the family caregivers of HIV/AIDS in Terengganu. The cross-sectional nature of the study has also limited the establishment of causal directions and restricted broader interpretation of the results.

**Conclusion**

Despite the highlighted limitations, our study has exhibited several outcomes that were deemed beneficial in enabling the understanding HRQoL profile of HIV/AIDS caregivers. It can be concluded that, generally, caregivers were most negatively affected in terms of burden while the HRQoL of women caregivers was significantly suppressed with regard to financial, quality of sleep as well as psychological well-being. Therefore, future research should attempt to develop effective interventions (e.g. educational programme, support group) which could assist in improving the caregivers’ HRQoL in order to provide optimal quality in care giving. Besides, the Malay CQoL instrument was considered valid and reliable for this current...
population but more studies in bigger samples are required to re-confirm its properties.

Acknowledgements

The authors would like to thank the Director General of Health Malaysia for permission to publish this paper and the Hospital Director, and staff of Hospital Sultanah Nur Zahirah (SN Noraziah Jaafar, SN Che Norma Che Mahmood and MA Salami Ismail) for their cooperation and valuable support in ensuring the success of this study. Our gratitude also goes to the Faculty of Medicine and Health Sciences, UniSZA for financial support (UniSZA.B/2/KP9/628) and the study participants for helping out in our study. Last but not least, our sincere appreciation to all individuals who had either contributed directly or indirectly to our study and the eventual publication of this manuscript.

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ORIGINAL PAPER

Salat and Dhikr to Dispel Voices: The Experience of Indonesian Muslim with Chronic Mental Illness

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Abstract

Objective: The aim of this study was to explore the experience of dispelling voices as articulated by Indonesian Muslim with chronic mental illness. Methods: Descriptive phenomenological approach was applied in explicating the phenomenon of dispelling voices in this study. In-depth audio-taped interviews were conducted with 24 participants. Analysis of participant transcripts was undertaken using Colaizzi’s (1973) approach. Findings: The finding of this study confirm that the participants found a personal path to living with hearing voices by doing salat or dhikr every time they heard the voices. Three theme explicated from this study: The voices are related to evil and Satan, Salat and dhikr to dispel voices and the strength of faith had an important influence over the voices. Conclusion: This study challenges the existing conceptualization of dispelling voices to consider the religion or cultural background of the individuals.

Keywords: Dispelling Voices, Chronic Mental Illness, Salat, Dhikr

Introduction

Hearing voices are potentially dangerous not only for people who experience them but also for other.\(^1\) Approximately 28% of people living with hearing voices consider suicide at least once per year.\(^2\) Hearing voices have been identified as the cause of self-harming behaviours.\(^3\) A study by McNiel et al, 2000 found that 30.1 % of patients with hearing voices reported experiencing voices telling them to hurt others and approximately 22.3 % of these people said they had complied with the voices instructing them to hurt others.\(^1\) Yet, a significant number of people with chronic mental illness such as schizophrenia experience persistent hearing voices despite psychopharmacological treatment.\(^4,5\)

Hearing voices affect the whole live of people who experience them.\(^6\) People who experience hearing voices reported that they cannot do daily activity and cannot relate to other. They felt anger, irritation and agitation, especially when they hear the voices frequently.\(^7\) The uncomfortable and disturbed presence of voices has led individuals to develop ways of coping to live with the voices.\(^2,8\)

The literature demonstrated that listening to radio headphone is effective for dispelling voices.\(^9\) Similar findings were demonstrated
by a single case study by Collins et al., 1989 in the UK that reported that listening to music and interesting conversations in a radio reduced the frequency of voices.\textsuperscript{10} While listening to uninteresting monologues or conversations and a blank tape had no effect eliminating the presence of the voices.\textsuperscript{10} Another single case study was carried out by Johnston et al., 2002 in the UK.\textsuperscript{11} The participant was treated using a personal stereo over a three week period. The three weeks involved one week with no treatment, one week with treatment and one week with control treatment. The findings of the study indicated that the use of a personal stereo could dispel the voices.\textsuperscript{11} However, as indicated in Johnston et al’s study the use of such devices or being exposed to sounds had no effect on individuals’ self-esteem and belief about the voices.

Unlike Johnston et al, 2002, a study in Japanese by Hayashi et al, 2007 of 144 people found that talking to someone and participating in hobbies such as playing games were the most effective coping strategies in dispelling voices, while retorting and reading aloud had minimal effect.\textsuperscript{12} Listening to appropriate and relaxing music was identified as being more effective than watching TV.\textsuperscript{12} Furthermore, Nayani and David,1996 found that watching TV triggered hearing voices because the voices commented on the television programs.\textsuperscript{13} Another study by Tsai and Chen, 2005 concerning self-management in people who experienced hearing voices using 144 people with chronic mental illness in Taiwan found that most of the patients developed their own distraction techniques such as ignoring the voices, engaging in activities, and accepting or arguing with the voices.\textsuperscript{5} As this was a self-report study of Taiwanese people, the findings of this study are only representative for this group of people.

In addition, a cross-cultural study by Wahass and Kent, 1997 in UK found that individuals’ strategies in dispelling voices were influenced by their cultural background. The finding indicated that people from UK who experienced hearing voices tended to use distraction and physiological techniques while people from Saudi Arabia were more likely to cope with the voices using religious approaches.\textsuperscript{14} However, the finding of Wahas and Ken’s study did not explore in dept what religious approach were used by their respondent in dispelling the voices. This study aim to explore in depth the experience of Indonesian muslim with chronic mental illness in dispeling voices as most Indonesian (approximately 88 %) practice the Islamic faith.\textsuperscript{15}

**Research design**

**Focus of the Study**

The research problem to be addressed in this study concerns the experience of dispelling voices. The research question which informs this study is: What is the experience of dispelling voices as articulated by Indonesian Muslim people with chronic mental illness?

**Participant Selection and Access**

Purposeful sampling was used for the recruitment of participants. To achieve the goal of this research, the inclusion criteria for participation were Indonesian Muslim who experience chronic mental illness, attending the outpatient department of a mental health facility, reported hearing voices, able to provide informed consent, and willing to be a participant in this study. Exclusion criteria were, living with a co-morbid substance abuse disorder or organic impairment, a primary mood disorder, or having a severe cognitive deficit that would
prohibit the person from participation in interviews.

Participants were contacted in person by the researcher. The venue for contact was the Outpatient Unit of the West Java Psychiatric Hospital. At the time the participants were informed that they needed to be assessed by the attending psychiatrist in order to ensure they met the inclusion and exclusion criteria for involvement in this project.

**Information Gathering**

Information was gathered through in-depth focused interviews. Each participant was interviewed twice. The purpose of the first interview was to explore participants’ experiences of living with hearing voices while the purpose of the second interview was to provide the opportunity for the participants to review the transcript of interview and the findings of the study. The length of the first interview with participants ranged from 45 to 60 minutes. The interviews were conducted in the Outpatient Department of the West Java Psychiatric Hospital. With the consent of participants the first interview was audio-taped in order to gain a contextual understanding of the interview dialogue. All of the interviews were conducted by the researcher.

**Information Analysis**

Analysis of the participant transcripts utilized Colaizzi’s (1973) seven step approach. The narrative of participants from audio-taped interviews was transcribed. Each participant’s description was read and re-read in order to obtain an overall sense of the participant’s experience, and then extracted significant statements. In the next step, the researcher formulated more general statements or meanings for each significant statement, and then organised the aggregate formalized meanings into clusters or themes. Before getting the fundamental structure/ definition of the phenomena, the researcher wrote an exhaustive description of the phenomenon. The exhaustive description was validated with each participant.

**Ethical consideration**

In undertaking this project a number of ethical issues were addressed including: letter of approval, informed consent, anonymity, confidentiality, storage of data, level of risk, and right to withdraw without prejudice.

**Results**

Twenty four participants were involved in this study. The ages of the participants were range from 19 to 56 years old. 10 participants are men and fourteen of them are women. sixteen of them are unemployed. Most of them have been hospitalized for 2 to 3 times.

**The voices are related to evil and Satan**

Most of the participants had experienced hearing voices for more than four years. Almost all participants said that the voices that they heard were related to evil and Satan. For example a participant, said: *I think... the voices are Satan’s voices... Yes... Satan’s voices, because they also prohibit me from praying and suggest me to sleep... and sleep.* In a similar vein, another participant stated: *she [the voice] was like Satan... I am scared of Satan... Only Satan interferes with man...I am sure Farida’s voice is Satan’s voice... I hear Farida’s voices every ‘maghrib’ (evening time from sunset to 7 pm).*

The participants believe that the voices are satan’ voices because the voices often disturb them and lead them to do bad things as stated by a participant: *I think... the voices were Satan’s voices.... I am...*
sure….they were Satan’s voices. Satan is always disturb people, doing bad thing to people and lead people to go to hell. I am sure they were not people voices…. Yes…. They were satan’ voices. The satans were disturbing and influencing my thoughts…….

Salat and dhikr to dispel voices
The participants sought help from Allah to dispel the voices. They seek releif from Allah by doing salat and dhikr. A participant stated: In my experience if I hear her voice... I directly go to the bathroom to take an ablution and salat (ritual prayer which is performed five times each day: at dawn (al-fajr), midday (al-zuhr), afternoon (al-asr), sunset (almaghrib) and evening (al-’isha). I am afraid... I do not want to hear her voice anymore.

From an Islamic point of view, salat is an activity that should be performed by all Moslems five times a day. Through salat, a Moslem is able to commune with Allah. Salat has several advantages for the person. Psychologically, the person performing the salat finds relief from the daily troubles of life including anxiety, fear, and pain as all of life’s difficulties are placed in the hands of Allah.

Another participant also performed salat to stop the voices and to prevent relapse. In sharing her experiences she said: I always salat and read ‘Al Qur’an’ when hearing the voices...I simply pray... [and] hope I can recover and never have a relapse. She also turned to doing dhikr when the voices were present. Such a practice is encouraged by Islam as a means of finding relief and peace in being in communion with Allah.

In a similar vein, another participant described how he experienced relief by doing ‘dhikr’ (remembering Allah by reading or saying the name of Allah): I just did ‘dhikr’ by saying Allahu Akbar [Allah is great] and Subhanallah [Glory to Allah]. I just performed ‘dhikr’ ... until the voices stopped.

‘Dhikr’ is usually performed by Moslems after doing salat. It can also be used in any circumstance or situation such as when a Moslem hopes for something or worries about something. The participants performed dhikr to be free from the voices.

For a participant, dhikr by saying astaghfirullah (Allah forgive me, please) was effective in stopping the voice of his wife which began occurring after leaving him to go to Saudi Arabia. He said: I just say astaghfirullah. Yes, I continue saying “astaghfirullah” until the voices stop.

Invoking the saying astaghfirullah is a way a Moslem seeks Allah’s forgiveness. It is usually performed after ‘salat wajib’ (the obligatory prayers) which are performed each day. It is also performed every time Moslems realize that they have committed a sin. In the participant’s case, he invoked the word astaghfirullah when hearing his wife’s voice because he felt that he had sinned for not being able to perform his role as head of the household.

Another participant discovered that dhikr by saying Allaahu Akbar was an effectively means of stopping the hearing voices. She said: In my experience in order to stop the voice just say ‘Allaahu akbar’, By saying ‘Allahu akbar’ for several times, alhamdulillah (thanks God) I can stop the voices. She stated further: No one taught me. I just tried it and it worked. Sharon shared her wisdom by suggesting: For patients who have similar experience to me they must always remember God by doing dhikr and
salat, because dhikr and salat can enhance and strengthen one’s faith.

The strength of faith had an important influence over the voices
Some participants believed the strength of their faith had an important influence over the voices. They believed that if their faith was strong no voices would be heard. A participant described her experience by stating: I mean...it depends on how strong my faith is. If my faith was not strong enough, I would die ... yes ... it depends on how strong my faith is... If my faith was not strong enough, I would be finished off by her. In similar vein, another participant said In my experience if my faith was strong... I often do dhikr and salat... and so I can dispell the voices. But, when my faith was weak, I find it difficult to dispell the voices.

Discussion
As presented in the finding, most participants believed that the voices was satan voices. The finding of this present study is consistent with a study by Sylvia et al, 2006 in Switzerland in which one of participants in their study believe that her hallucinations and delusions are due to bad spirits. The findings of Wahass and Kent’s study, 1997 in the UK were also similar to the finding of this present study in respect of the belief that hearing voices are caused by Satan. The findings of this present study were also in line with the finding of a study by Kurihara et al, 2006 in Bali, Indonesia in which the majority of the participants in their study reported that schizophrenia or chronic mental illness were caused by witchcraft.

The majority of the participants performed salat and dhikr whenever they heard voices. They seek relief from Allah because they believe that Allah is the most powerful and merciful, only by seeking help from him people can be protected from evil spirit. At times of seeking relief in Allah, participants turned to do salat and dhikr as a means of invoking Allah’s help. For a number of the participants the very act of engaging in doing salat was a potent means of stopping the voices. This finding is consistent with this researcher’s previous study where 22.5 % of respondents used praying to expel the presence of the voices. This finding is also supported by the findings of Lee et al’s study in which 25% of participants used praying to cope with the experience of hearing voices. This finding is also consistent with a study by Sylvia et al, 2006 in Geneva who interviewed 115 people diagnosed with schizophrenia using semi structured interviews. The findings of their study indicated that 71 % of participants used religious practices as a mean of coping with voices. The finding of this study is also consistent with an empirical phenomenological study by Yip, 2003 in Hong Kong in which four participants from a Psychiatric Halfway House and an Outpatient Clinic were interviewed about their experiences of hearing voices and delusions. The findings of their study revealed that religious beliefs and superstitions impacted on the meaning attributed to the participants’ hearing voices and the way they cope with the voices. This has significant implication for work with cross-cultural population. For example, the use of salat and dhikr in dispelling voices was not only about seeking Allah’s assistance to be free from such intrusions, but also because they harboured a belief that the voices came from evil spirits such as Satan. According to Vandenbroeck, 2008, the majority of Indonesian people are Moslem and therefore, they believe that people who suffer from mental illness have a weak faith or lack the ability to believe in
Allah. This alleged spiritual weakness provides fertile ground for Satan’s evil influences.

An ethnographic study by Horikoshi-Roe, 1979 in West Java reported that Muslim people view mental illness as a result of inadequate religious faith. Similarly, another ethnographic study by Saptandari, 2001 in Java found that the developing of mental illness could be caused by lack of attention to daily religious practice and weak faith. If people are strong in their faith, they are less likely to become mentally ill. The faithful individual is protected by God from any form of disturbance that may lead to hearing voices or behaving in strange ways such as talking to oneself as a consequence of hearing voices.

Furthermore, participants in this study believed that their strength of faith has a significant impact on the presence of hearing voices. This finding is supported by a previous study by Lindgren and Coursey, 1995 in Maryland that was conducted in psychosocial rehabilitation. The study explored the influence of spirituality on the lives people with serious mental illness. Thirty participants took part in the study. The findings of the study revealed that spiritual belief had a positive correlation with patients’ recovery from their illness. Lindgren and Coursey, 1995, suggested that people who have a strong spiritual belief feel a sense of comfort and being cared for, resulting in better outcomes. Harahap and Dalimunthe, 2008 in their book “Dahsyatnya doa dan zikir: agar diberi kesehatan, kekayaan dan kebahagiaan” (Enormity of prayer and dhikr: for given health, wealth and happiness) stated that dhikr can be reassuring because when we rely remembrance all matter to God, we will have sense of calm and peace in the hearts and minds. According to medical science, at the moment of remembrance Allah, chemicals (endorphins) come out automatically in the human brain. These substances resulting in a sense of calm and peace in the human mind because its function is similar to morphine.

**Limitations of the Study**

As this study was conducted by applying a phenomenological approach to inquiry in which deep and rich descriptions of the participants’ experiences of the participants were sought, only a small number of participants were involved in this study. Therefore the results of this study cannot be generalized to the broader population. However, the findings of this study have the potential to fill a ‘blind spot’ in knowledge about auditory hallucinations from an Indonesian perspective.

**Conclusion**

This study explored the experience of Indonesian muslim with chronic mental illness in dispeling voices. The finding of this study articulated that Indonesian Muslim performed salat and dhikr to dispel voices. From the discussion above it can be argued that hearing voices have significant meaning for the individuals. The ways they dispel voices were influenced by their religious background. The findings of this research contribute to the literature on the way people dispel voices. This current study adds new understandings about the experience of dispeling voices from a different socio-cultural perspective to those of other studies.

**Acknowledgements**

I would like to thank the Indonesia Directorate General of Higher Education that provided scholarship for my PhD study.
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Perceived Social Support among University Students in Malaysia: 
A Reliability Study

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Abstract

Background: Social support is the perception that one is cared for, has assistance available from friends and significant others. Social support can be measured by The Multidimensional Scale of Perceived Social Support. This scale has been widely used and validated in different languages. Objective: To determine the factor structure of The Multidimensional Scale of Perceived Social Support scale and find its reliability. Method: 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 English version of Multidimensional Scale of Perceived Social Support scale (MSPSS) that was administered. In all 313 undergraduate students were studied. Exploratory factor analysis, with varimax rotation, was applied to the data Results: The three factor solution accounted for 80.51 % of the total variance. The procedure output has an overall alpha of 0.921. Conclusion: The MSPSS appears to be good enough to be used in Malaysia however more studies are required.

Keywords: Social Support, Stress, Multidimensional Scale

Introduction

Social support helps individuals to reduce the amount of stress experienced and to cope better in dealing with stressful life situations. The beneficial impact of social support has been associated with both physical and mental health outcomes. Social support is closely related to ties with family, friends, neighbours, and others of significance to the person which includes empathy, concern, caring, love, and trust. One of the first definitions of social support was put forward by Cobb. He defined social support as ‘the individual belief that one is cared for and loved, esteemed and valued, and belongs to a network of communication and mutual obligations’. Gurung refers to social support as the experience being valued, respected, cared about, and loved by others who are present in one’s life. Social support has generally been found to promote psychological well-being, as well as to buffer the effects of stress. Perceived social support and physical health are two very important factors help the overall well-being of the
individual. The absence of social support shows negative influence on health. Support such as emotional, academic, and financial are tremendous factors in the success of a college student. Some studies have shown that the amount of social support from the university and outside contributors like family, friends and mentors can make a huge impact on a student’s success.

The Multidimensional Scale of Perceived Social Support scale (MSPSS) was developed by Zimet to measure social support. It is easy to administer. The MSPSS is a 12-item scale, self-report instrument. It measures individuals social support from three specific areas namely family, friends, and significant others. Each of the 3 areas has 4 subscales. Items were measured on 7-point Likert-type scale from 1 ‘very strongly disagree’ to 7 ‘very strongly agree’. The MSPSS evaluates perceived social support (PSS) from family (FA), friends (FR), and significant others (SO) and quantifies the degree to which respondents perceive support from each of these three sources, namely FA, FR and SO.

MSPSS has been translated and validated in various languages. The psychometric properties of the Multidimensional Scale of Perceived Social Support (MSPSS) of the Urdu (MSPSS-U) and Nepali (MSPSS-N) versions were investigated among Pakistani (n = 148) and Nepalese (n = 153) respondents living in Hong Kong. Başol validated the scale among a group of 433 Turkish school administrators. Wongpakaran et al examined the Thai version of MSPSS. Ramaswamy et al revised the MSPSS among Arab American adolescents (MSPSS-AA). Bruwer et al validate the scale in South Africa. The Malay version (MSPSS-M) is a psychometrically valid instrument with high internal consistency, which is useful in assessing perceived social support in Malaysian population (Ng et al, 2013).

**Objectives of the study**
To determine the factor structure of The Multidimensional Scale of Perceived Social Support scale and find its reliability.

**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. The MSPSS was distributed in the classroom. The researcher remained visible in the area for participants to ask questions and then collected the questionnaire after 20 minutes. Study was approved by university research committee.

**Study design:** The study questionnaire was designed to include questions regarding socio-demographic aspects of the students; and the Multidimensional Scale of Perceived Social Support scale (MSPSS) that was developed by Zimet was administered. Lower scores suggest lower perception of social support, while higher scores propose higher perception of perceived social support. Scores are derived by summing the individual items and dividing by the number of items. The MSPSS has very good internal consistency with reported alpha coefficients of 0.91 for the total score and 0.90 to 0.95 for each of the three subscales. Although the Malay version is available, it was decided to use the English version for comparison.

**Sample**
The questionnaire and the MSPSS were distributed in class and were collected back
upon completion. The English version of MSPSS is easy to understand and students had no difficulty. 480 students were asked to complete the questionnaire only 313 questionnaires were complete in all respects. (Completion rate=65.2%).

**Analysis**

SPSS version 17 was used to analyse the data. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy is an index used to examine the appropriateness of factor analysis. High values (between 0.5 and 1.0) indicate factor analysis is appropriate. Values below 0.5 imply that factor analysis may not be appropriate. In this study the KMO measure of sampling adequacy was 0.862 which is meritorious\(^{14}\).

Bartlett's test of sphericity is a test statistic used to examine the hypothesis that the variables are uncorrelated in the population. In other words, the population correlation matrix is an identity matrix; each variable correlates perfectly with itself (\(r = 1\)) but has no correlation with the other variables (\(r = 0\)), in this study the Bartlett test of sphericity is 3289.15 (df 66 p<0.000). 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 \(\geq 0.40\) to suppress absolute value less than 0.40.

Principle component analysis was used as extraction method. Number of factors to extract was 3. 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\(^{15}\).

Cronbach’s alpha\(^{16}\) 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\(^{17}\). The higher the score, the more reliable the generated scale is. Nunnaly\(^{18}\) has indicated 0.7 to be an acceptable reliability coefficient.

**Results**

**Demographic characteristics of the students**

63% were female students and 37% were male students. Age ranged from 19 to 24 years with a mean age of 19 years. A vast majority (51%) were studying in the first year, 31% in the second year and 18% in the third year. 44% were Malay race 37% were Chinese, 15% were other race (indigenous tribes) and 4% were Indians.

**Social Support**

The mean and standard deviation of the MSPSS and the three subscales are as follows: Total scale (M=5.33, SD=1.12), Family (M=5.76, SD=1.26), Friends (M=5.00, SD=1.19), Significant others (M=4.99, SD=1.49).

**Table 1. Correlations between the subscales**

<table>
<thead>
<tr>
<th></th>
<th>FR</th>
<th>FA</th>
<th>SO</th>
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</thead>
<tbody>
<tr>
<td>FR</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FA</td>
<td>0.75**</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>SO</td>
<td>0.46**</td>
<td>0.43**</td>
<td>1</td>
</tr>
</tbody>
</table>

**Correlation Significant at 0.01 (two-tailed)**
As seen in Table 1, high correlation was found between Family (FA) and Friend (FR) subscale (0.75) compared to significant others and friends and significant others and family. Correlation among the three factors ranged from \( r=0.43 \) for family and significant others; with Friends and Family \( r=0.75 \); and \( r=0.46 \) for significant others and friends.

**Table 2. Exploratory Factor Analysis: Varimax solution with three factors for MSPSS\(^a\)**

<table>
<thead>
<tr>
<th>Item No.</th>
<th>MSPSS Item</th>
<th>Factor Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Factor 1</td>
</tr>
<tr>
<td><strong>FAMILY</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>My family really tries to help me.</td>
<td>0.86</td>
</tr>
<tr>
<td>4.</td>
<td>I get the emotional help &amp; support I need from my family.</td>
<td>0.84</td>
</tr>
<tr>
<td>8.</td>
<td>I can talk about my problems with my family.</td>
<td>0.73</td>
</tr>
<tr>
<td>11.</td>
<td>My family is willing to help me make decisions</td>
<td>0.85</td>
</tr>
<tr>
<td><strong>FRIENDS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>My friends really try to help me</td>
<td>0.70</td>
</tr>
<tr>
<td>7.</td>
<td>I can count on my friends when things go wrong</td>
<td>0.83</td>
</tr>
<tr>
<td>9.</td>
<td>I have friends with whom I can share my joys and sorrows</td>
<td>0.54</td>
</tr>
<tr>
<td>12.</td>
<td>I can talk about my problems with my friends</td>
<td>0.81</td>
</tr>
<tr>
<td><strong>SIG. OTHERS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>There is a special person who is around when I am in need</td>
<td>0.84</td>
</tr>
<tr>
<td>2.</td>
<td>There is a special person with whom I can share joys and sorrows</td>
<td>0.85</td>
</tr>
<tr>
<td>5.</td>
<td>I have a special person who is a real source of comfort to me</td>
<td>0.88</td>
</tr>
<tr>
<td>10.</td>
<td>There is a special person in my life who cares about my feelings</td>
<td>0.89</td>
</tr>
</tbody>
</table>

a. Total percent of variance = 80.51%.
b. Eigenvalue=3.80 ;percent of variance =31.70
c. Eigenvalue= 3.29;percent of variance =27.46
d. Eigenvalue=2.56 ;percent of variance =21.34

The overall results from the Exploratory Factor Analysis are presented in Table 2. MSPSS was factor analysed, Principal Component Analysis was used to explore factor structures. The three factor solution accounted for 80.51% of the total variance.

It was found that the loadings ranged from 0.54 to 0.89. Majority of the loading was >0.50. Only one item (9) showed poor loading (0.54). Varimax rotation was applied to the data to obtain four subscales solutions.
The first subscale grouped the following items: No. 3,4,8 & 11. The 4 items fitted under the first subscale named “Family”. Variance explained 31.70 %. The reliability $\alpha=0.88$.

The second subscale grouped the following items: No. 6,7,9 & 12. The 4 items fitted under the second subscale named “Friends”. Variance explained 27.46 %. The reliability $\alpha=0.89$. The third subscale grouped the following items: No.1, 2, 5 & 10. The 4 items fitted under the third subscale named “Significant others”. Variance explained 21.34 %. The reliability $\alpha=0.92$.

11 items 1,2,3,4,5,6,7,8,10,11 & 12 showed good loading ranging between 0.70 to 0.89. Only one item 9 had poor loading. The internal consistency of Third subscale (SO) was higher compared to other factors.

Psychometric properties were evaluated by Cronbach’s alpha index of internal reliability. The reliability coefficients fluctuated between 0.92 and 0.88. If items with low homogeneity index (HI) were to be deleted it was presumed that there would be substantial increase in alpha. The homogeneity indices were greater than 0.63, except for items 3 which presented a low homogeneity index. Removal of items with low homogeneity index did not increase the value of alpha.

**Discussion**

Although the protective role of social support is well established in the health literature, antecedents of perceived social support are not well understood$^{19}$. College students are at critical period when they will enter adulthood. They are expected to be the elite in the society. Thus, they should enhance their stress management abilities so as to live a healthy life after entering the society$^{20}$. Studies examining measures of well-being (e.g., depression, overall happiness, life satisfaction) have concluded that social support is emotionally beneficial$^{21}$.

In this study the least score on the MSPSS was 2 and the maximum score was 7. ($\bar{x} = 5.3$, $SD=1.13$). In their original study Zimet et al$^{22}$ proposed three factor structures. In this study, the MSPSS too was categorized into three sub scales;

**Factor 1**: Family: ‘Family support’ has 4 items loaded. ‘Family support’ is related support received by the family.

**Factor 2**: Friends: ‘Support from friends’ has 4 items loaded. ‘Support from friends’ relates perceived support received from friends.

**Factor 3**: Significant other: ‘Support from significant other’ has 4 items loaded. ‘Support from significant other’ refers to perceived social support from people whom the individual values most.

These subscales emerged from exploratory factor analysis, grouping the 12 items, according to their respective content. The total variance explained was 80.51%. The variance explained in the Malaysian study$^{23}$ reported a variance of 70.23%. Mitchell and Zimet$^{24}$ in their study reported the factor analysis accounted for 79.3% variance. Wongpakaran et al$^{10}$ reported variance of 73.13 %.

The main issue pertaining to MSPSS is whether to have 3 subscales or 2 subscales since significant others (SO) and friends (FR) sub scales appear to mean the same. Chow$^{25}$ in his study explained only 2 factor solutions and has merged SO and FR into a single factor. In a similar study done by
Cheng and Chan among Hong Kong adolescents; they found that although the 3 factor model was well fitting, the SO item appeared to be less uni-dimensional and redundant. They found that 2-factor solution is as good as 3-factor model. Canthy-Michell and Zimet argued that the SO is an independent subscale as it measures support from boyfriend, teacher and counselors.

Bruwer et al tested the MSPSS on South African adolescents and found to demonstrate a three factor structure. Wongpakaran et al conducted a similar study among Thai population and reported that it is good enough to use as a 3-factor structure. He criticized Cheng and Chan’s work of suggesting 2-factor model and argued that it was deemed to have occurred due to problems with translation method or due to cultural differences (East verses west). In this study, the variance explained and reliability from the three sub scales was good to support the 3-factor model.

Reliability

In this study, the procedure output has an overall alpha of 0.921 in the full sample is excellent considering that 0.70 is the cut-off value for being acceptable. The Family (FA), Friends (FR) and significant others (SO) subscale demonstrated alpha of 0.88, 0.89 and 0.93 respectively, this clearly indicates that each sub scales has good internal consistency. There was not much change in the Cronbach’s alpha coefficient if items with low homogeneity index were deleted. In a similar study done by Ng et al on the Malay version MSPSS-M, Cronbach’s alpha was 0.88, 0.90 and 0.92 respectively on FA, FR and SO. Not much difference was observed between this study and MSPSS-M

Although the English version of MSPSS and the Malay version of MSPSS-M appear to be similar in the validity there are few points that are worth noting. The English version had better correlation between family and friends (r=0.75) compared to Malay version (r=0.38). The total variance explained in the English version was 80.51%, while the Malay version was 70.23%. Could this difference in MSPSS-M be due to translation method used that contributed to measurement errors or perhaps test-retest reliability of this instrument was not done.

Conclusion

The variance explained was 80.51%. The procedure output has an overall alpha of 0.921. The MSPSS appears to be good enough to be used in Malaysia however, more studies are required to be done, as the present study is cross-sectional, the sample size was small, the results may not be used generalize to a wider population; the validity of the scale was not tested.

References


17. Hatcher L. A step-by-step approach to using the SAS(R) system for factor analysis and structural


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Resilience and Coping Strategies in the Patients with Conversion Disorder and General Medical Conditions: A Comparative Study

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Abstract

Objective: The aim of the present research was to investigate resilience and coping strategies in the patients with conversion disorder and general medical conditions and to compare the findings of both the groups. Method: The research was conducted in five teaching hospitals of Lahore, Pakistan. The total sample was 100. Both men and women with ages 18 years and above were included in the study. Cross sectional research design was used. The assessment tools used were State- Trait Resilience Inventory (STRI), and Coping Strategies Questionnaire (CSQ). Results: The Results of the independent sample t-test indicated that the trait resilience of the patients with general medical conditions was higher than that of the patients with conversion disorder. Moreover, among all the types of coping strategies, the patients with conversion disorder were using avoidance-focused coping strategies more than the patients with general medical conditions. Furthermore, the patients with general medical conditions were using active-focused coping strategies more than the patients with conversion disorder. Conclusion: The findings of the research are interesting as they have implications in devising therapeutic interventions for the patients with conversion disorder.

Keywords: Conversion Disorder, General Medical Conditions, Cross-Sectional Design, State-Trait Resilience, Avoidance-Focused Coping

Introduction

Conversion disorder, which was earlier recorded in the history as hysteria or hysterical conversion, is the condition in which the psychological stress is manifested in physical symptoms. DSM-IV-TR¹ defines conversion disorder as a condition with one or more symptoms or deficits affecting voluntary, motor or sensory functions that suggest a neurological or other general medical condition. Depending on the nature of symptoms and the complaints with which the patients present, conversion disorder can be divided into four subtypes i.e. conversion disorder with motor symptoms or deficits, conversion disorder with sensory symptoms or deficits, conversion disorder with seizures or convulsions and conversion disorder with mixed presentation. Regardless of the type
and symptoms of conversion disorder, psychological factors are judged to be associated with the symptoms of conversion disorder and are not associated with any physical cause. The etiology of conversion disorder in the ancient times was considered to have biological origins. The ancient Greeks described that this condition was caused due to the uterus actually wandering in the female body and named it Hysteria which means wandering womb. Similarly, according to Hippocrates, the unconsciousness, paralysis or the physical symptoms were caused due to the movement or seizure of female reproductive parts. Afterwards, with the advent and rise of Christianity in the 16th century, conversion disorder was thought to result from the devil possession and witchcraft. After the advancement in understanding of nervous system, the focus of the theorists shifted from ancient gynecological and demonological theories to the modern theories of biological origin. Later, Charcot regarded hysteria as a nervous system dysfunction. By the end of 19th century, the term dissociation was coined by Janet and it was considered that conversion symptoms were caused due to the breakdown and disruption of normal mental processes into ideas, acts, sensory functions and motor functions. Twin studies conducted in the recent past to find out the causes of conversion disorder have shown that biological, genetic or hereditary factors did not contribute to the development of conversion symptoms which indicates that psychological factors or stressors mainly are associated with the onset of the disorder.

The most influential etiological formulation was put forward by Freud. According to him, conversion was a condition that resulted when the unacceptable mental contents, wishes and desires of a person were transformed into physical symptoms. Repression, according to Freud and Breuer, was the phenomenon behind the development of conversion disorder. It meant that conversion disorder resulted when the emotionally stressful event was repressed in the unconscious of the person.

Besides these historical explanations, there are some other comparatively recent schools of thought that need to be discussed. Among them, behavioral perspective was proposed by Ulman and Krasner, according to which, the symptoms are produced as a result of role enactments that have been learnt by the environment. Moreover, another research emphasized that the symptoms of conversion disorder are shaped by environment through operant conditioning and the physical symptoms of conversion disorder function as maladaptive operant behaviors which act on the environment for gains or rewards. Conversion disorder is thus strengthened by the effect of such behaviors.

According to object-relations perspective, the cause of conversion disorder is the unconscious conflict between the person’s inner self and the significant figures, which develop in early childhood, and manifest in the present situations by the production of bodily symptoms. These symptoms reduce the anxiety and help the patient to receive rewards or gains. Last but not the least, conversion disorder can also be explained by socio-cultural theories which assert that conversion disorder is common in those cultures and societies where direct expression of emotions is not allowed due to gender roles, religious beliefs or other socio-cultural factors. In such cases, conversion disorder helps the patients to communicate the forbidden ideas and feeling through non-verbal communication or physical symptoms. Recent researches on
conversion disorder acknowledge the fact that this condition has declined in the West and currently, it is only prevalent in developing countries such as Libya, Turkey, Egypt and India\textsuperscript{11-14}. Moreover, studies have also shown that conversion disorder is more prevalent in rural areas and in people with low socio-economic status\textsuperscript{5}. Some modern theories are of the view that some other causes of conversion disorder include external stressors, socio-familial and cultural factors\textsuperscript{15}.

Researches conducted in Pakistan indicate that conversion disorder is one of the most prevalent psychiatric diagnoses representing 12.4\% of the admissions in the inpatient psychiatric unit\textsuperscript{16}. Another study reported it as the 5\textsuperscript{th} most common psychiatric disorder in Pakistan\textsuperscript{17}. The reason for such a high prevalence is that in countries like Pakistan, people are still bound to the conventional gender roles where females are not allowed to freely express themselves. According to Aamir, Farooq & Jahangir\textsuperscript{18} important characteristics of Pakistani people who experience conversion disorder were being female, low socio-economic status and low educational level. Moreover, societies like Pakistani society have oppressive rules and values related to sexuality which might also result in such a high frequency of conversion disorder\textsuperscript{19}. According to Huang et al.\textsuperscript{20}, the literature available regarding the causes of conversion disorder suggest that factors like being female, psychological distress, conflicts in the family, trauma and socioeconomic factors play a very important role in the etiology of conversion disorder.

On account of the prior literature, one can establish a strong association between the stressful life events and conversion disorder for example, a research in this area found that the patients with conversion disorder were more stressed, emotionally weak and had low resilience\textsuperscript{21}.

Resilience is a process consisting of positive and healthy adaptation within the context of adversity\textsuperscript{22}. Resilience is thought to play a very important role in the health and well-being of the individual\textsuperscript{23}. Some authors\textsuperscript{24} stated that research in this area helps guide about the intervention and treatment of pathologies related to stress. According to Hiew, Mori, Shimizu & Tominaga\textsuperscript{25} resilience in adults can be differentiated on whether the resilience characteristics are current dominant states at the present time or have been there since childhood. On the basis of this discrimination, two types of resilience were proposed namely state resilience and trait resilience. Moreover, both the state and trait resilience had significant correlation with three sources of resilience that is, “I am” factor based on personal characteristics, “I can” factor, based on interpersonal competencies and “I have” factor concerned with building social relationships. The first two factors were concerned with the person himself (intra-) and the next two factors involve society and other people (inter). Furthermore, resilience was thought to be enhanced by coping, which is defined by Folkman and Lazarus\textsuperscript{26} as any cognitive or behavioral effort to deal with the stressful demands of a person’s life which are thought to be exceeding a person’s resource. They categorized the construct of coping into problem-focused coping and emotion-focused coping. Problem-focused coping involves reducing stress by problem solving whereas; emotion-focused coping undertakes emotional distress associated with the particular situation. The coping strategies employing problem-focused coping are active coping, planning or religious coping. Moreover, avoidance-focused coping strategies are an example of emotion-focused coping\textsuperscript{27}.
The relationship of resilience and coping in relation to mental health has been studied by the researchers and it was found that there was a positive association between problem-focused coping strategies and resilience and both promote mental health. On the other hand emotion-focused coping strategies were found to be negatively associated with resilience and were thought to cause psycho-pathology.

Based on the above mentioned literature, we proposed that the state resilience, inter-state resilience and intra-state resilience of the participants with general medical conditions will be higher than the participants with conversion disorder. Moreover, the trait resilience, inter-trait resilience and intra-trait resilience of the participants with general medical conditions will be higher than the participants with conversion disorder. It was also proposed that the participants with general medical conditions will be using active-practical coping strategies more than the participants with conversion disorder and the participants of conversion disorder will be using avoidance-focused coping strategies and active-distracting coping strategies more than the participants with general medical conditions.

Methods

Study Design
The research design used in the present study was cross-sectional design.

Participants
Non-probability purposive sampling was used to collect the data. The participants of the study were selected from two independent populations; that is the patients diagnosed with conversion disorder and those with general medical conditions. G-Power analysis was used to determine the sample size. By keeping the effect size medium \((d) = 0.5\), probability \((\alpha) = 0.1\), power of the study \((1-\beta) = 0.9\) and equal allocation ratio for both the groups, that is \((N2/N1)=1\), the sample size for both the groups was found to be 53 participants each. However, the total number of participants included in the present research had to be reduced to 100, 50 in each group, as the doctors in the Government hospitals went on strike and there were no patients in the outpatient units of the hospitals.

Inclusion Criteria
Both men and women with ages ranging from 18 years and above were included in the study. For conversion disorder, all the participants fulfilling the DSM-IV-TR diagnostic criteria for conversion disorder were included in the study regardless of their duration of illness. Patients, with all types of conversion disorder were included in the study and there was a wide range of symptoms. For example, sensory deficits like blindness, motor symptoms like paralysis, pseudo-seizures as well as mixed presentation were included. For general medical conditions, the patients with minor physical illnesses such as fever, cough, sore throat, headache, indigestion, minor aches & pains, diarrhea/constipation and infectious diseases were included in the study.

Exclusion Criteria
Any participant with co-morbid organic illness, psychiatric co-morbidity in which conversion disorder was secondary diagnosis, severe medical illnesses like cancer and HIV/AIDS and substance related disorder were excluded from the study.

Instruments

Demographic Questionnaire
A demographic questionnaire was devised to take demographic information of the participants.
State Trait Resilience Inventory (STRI)
State and trait resilience were measured using Urdu translated version of State Trait Resilience Inventory (STRI). It is a 35 items inventory developed by Hiew (2002) and translated in Urdu by Kauser and Jabeen (2009). STRI had two subscales that is State Resilience Scale (SRC) and Childhood Trait Resilience Scale (TRC). The State Resilience Scale (SRC) has 15 items and Trait Resilience scale (TRC) has 18 items of personality characteristics that depict resilience. Respondents rate themselves on a likert scale of 1 to 5 on each item. i.e. (from ‘strongly disagree’=1 to ‘strongly agree’=5). Moreover, the scale also measures inter-state resilience, intra-state resilience, inter-trait resilience and intra-trait resilience of the participants. The chronbach alpha coefficient of the state resilience scale for present study was .77, and that of trait resilience scale was .85. Moreover the α reliabilities of inter-state resilience and intra-state resilience were .55 and .72 and for inter-trait resilience and intra-trait resilience were .72 and .78 respectively.

Coping Strategies Questionnaire (CSQ)
Coping strategies of the participants were measured by Coping Strategies Questionnaire (CSQ). It is a 62 items scale developed by Kausar (1998) for Pakistani population to assess the coping strategies. The scale measures 4 categories of coping strategies that is; active- practical coping, active – distractive coping, avoidance focused coping and religious focused coping. The Coping Strategies Questionnaire (CSQ) is rated on a 5-point likert scale (‘does not apply’=1 to ‘very much’=5). The chronbach alpha reliabilities of the scale for present study was found to be 0.85. Moreover, the alpha reliabilities of the subscales were calculated and they were found to be 0.77, for active-practical coping, 0.55 for active-distracting coping, 0.71 for avoidance-focused coping and 0.81 for religion-focused coping subscales.

Procedure
Data for the study was collected from the inpatient and out-patient departments of five teaching hospitals of Lahore, Pakistan as conversion disorder is mostly reported in those hospitals. Mental health professional in the outpatient and inpatient psychiatry departments of Jinnah hospital, Sir Ganga Ram hospital, Lahore General hospital, Mayo hospital and Services hospital were contacted and were requested to refer the patients with the diagnosis of conversion disorder to be included in the study. Similarly, medical professionals in the inpatients and outpatient medical departments were also contacted and they were requested to refer the patients with minor physical illnesses to be included in the study as a comparative group. Before starting the main study, a pilot study was conducted to evaluate and assess the comprehension of the assessment tools. The initial 20 patients included in the pilot study were included in the main study as they did not point out any difficulty in the comprehension of the tools and hence no change was recommended. The patients who were referred were re-assessed on the DSM-IV-TR diagnostic criteria of conversion disorder to confirm the diagnosis. Moreover, mental state examination was done to rule out any psychiatric co-morbidity. A single administration took 20-25 minutes.

Ethical Considerations
Written informed consent was taken from all the participants after explaining the aims and objectives of the research. The participants were informed that they had the right to withdraw from the research. Moreover, no monetary benefits were offered.
Data Analyses
Data were analyzed using Statistical Package for Social Sciences, Version 19. Demographic variables were analyzed using descriptive analysis and the difference between the use of coping strategies and state and trait resilience between two groups was obtained by independent samples t-test.

Results

1. Descriptive Analyses
In the group with conversion disorder 46(92%) of the participants were women and 4(8%) were men. Likewise, 45(90%) participants in the group with the General Medical Conditions were women and 5(10%) were men. The mean age of the participants with conversion disorder was 24.4 years (SD=9) and 27.4 years (SD=9.6) for the participants with general medical conditions. Most of the participants in the group with conversion disorder were educated till grade 10. Their mean education was 9.9 years (SD=3.08). Similarly, the mean education of the participants with general medical conditions was 11.2 years (SD=2.8). Most of the participants in both the groups belonged to lower socio-economic status and the mean monthly income ranged from Rs 16,788.8 (SD=14314.8) to Rs 27,202 (SD=33,596). The demographic variables can be seen in Table 1.

Table 1. Descriptive analyses of Demographic variables (N=100)

<table>
<thead>
<tr>
<th>Variables</th>
<th>CD (n= 50)</th>
<th>GMC (n=50)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>f(%)</td>
<td>M</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Men</td>
<td>4(8)</td>
<td>-</td>
</tr>
<tr>
<td>Women</td>
<td>46(92)</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>24.4</td>
<td>9.0</td>
</tr>
<tr>
<td>Education</td>
<td>-</td>
<td>9.9</td>
</tr>
<tr>
<td>Monthly Income in</td>
<td>-</td>
<td>16,788.8</td>
</tr>
<tr>
<td>Rupees</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. CD= Conversion Disorder (n=50), GMC=General Medical Conditions (n=50).

State-Trait Resilience
The Results in Table 2 indicate that the trait resilience of the participants with conversion disorder was lower 61.24 (SD=10.27) than the participants with general medical conditions, 64.8 (SD=9.33). Moreover, intra-trait resilience of the participants with general medical conditions was higher 7.12 (SD=1.07) than the participants with conversion disorder 6.54 (SD=1.29). The two groups of participants did not have any significant difference in the other resilience scores. Moreover, there was no difference on the total resilience score of both the groups.

Coping Strategies
The results of the analysis indicated that the participants with general medical conditions were using active-practical coping strategies more 6.3 (SD=0.82) than the participants with conversion disorder 5.97 (SD=0.89). The results also revealed that the participants with conversion disorder used more avoidance- focused coping strategies 6.50 (SD=0.72) than the participants with
general medical conditions 6.09 (SD=0.72). Moreover, there was no significant difference in the use of religious coping strategies between the participants with conversion disorder 6.57 (SD=1.00), and the participants with general medical conditions 6.67(SD=1.16). See Table 2.

Table 2. t-test showing the differences between Coping Strategies, State Resilience, Trait Resilience, Inter-State Resilience, Intra-State Resilience, Inter-Trait Resilience and Intra-Trait Resilience among the Participants with Conversion Disorder and those with General medical conditions (N=100)

<table>
<thead>
<tr>
<th>Variables</th>
<th>CD (n=50)</th>
<th>GMC (n=50)</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
</tr>
<tr>
<td>State Resilience</td>
<td>53.48</td>
<td>7.75</td>
<td>55.16</td>
</tr>
<tr>
<td>Trait Resilience</td>
<td>61.24*</td>
<td>10.2</td>
<td>64.88</td>
</tr>
<tr>
<td>Inter-State Resilience</td>
<td>6.96</td>
<td>1.18</td>
<td>7.00</td>
</tr>
<tr>
<td>Intra-State Resilience</td>
<td>7.24</td>
<td>1.17</td>
<td>7.59</td>
</tr>
<tr>
<td>Inter-Trait Resilience</td>
<td>7.13</td>
<td>1.14</td>
<td>7.31</td>
</tr>
<tr>
<td>Intra-Trait Resilience</td>
<td>6.54**</td>
<td>1.29</td>
<td>7.12</td>
</tr>
<tr>
<td>Total Resilience Scores</td>
<td>114.72</td>
<td>17.2</td>
<td>120.04</td>
</tr>
<tr>
<td>Active-Practical Coping Strategies</td>
<td>5.97*</td>
<td>0.89</td>
<td>6.3</td>
</tr>
<tr>
<td>Active-Distracting Coping Strategies</td>
<td>5.29</td>
<td>1.00</td>
<td>5.54</td>
</tr>
<tr>
<td>Avoidance-Focused Coping Strategies</td>
<td>6.50***</td>
<td>0.72</td>
<td>6.09</td>
</tr>
<tr>
<td>Religious-Focused Coping Strategies</td>
<td>6.57</td>
<td>1.00</td>
<td>6.76</td>
</tr>
<tr>
<td>Total coping scores</td>
<td>24.34</td>
<td>2.71</td>
<td>24.77</td>
</tr>
</tbody>
</table>

Note. CD= Conversion Disorder, GMC= General Medical Conditions, CI= Confidence Interval, LL= Lower Limit, UL= Upper Limit
Discussion

The results showed that there was no significant difference in the overall state resilience of the participant of both groups. State resilience scale is a measure of current resiliency of an individual\textsuperscript{25}. The present findings suggest that the participants with conversion disorder and those with general medical conditions had the same level of state resilience. The results also revealed that there was no difference between the inter-state and intra-state resilience of the participants. Contradictory to the prior literature which suggested that the people with negative emotional states and psychological problems are less resilient than those with the positive ones\textsuperscript{25}, the present research indicated that both the groups did not differ on these constructs of resilience. These contradictory results account for more research in this area to verify and substantiate the present findings. Based on the characteristics and demographic features of the participants included in the study, it can be assumed that all the participants had low state or current resilience because of a number of factors; like personality traits\textsuperscript{31}, stressful life conditions, demographics (like women, low socio-economic status, life experiences, social support etc.), disease, unstable economic conditions, overall atmosphere of the country or repressive style of coping\textsuperscript{23}. Contrary to this, the trait resilience of the participants with general medical conditions was higher than the participants with conversion disorder. This finding was consistent with the previous literature which has established the relationship of resilience with personality traits\textsuperscript{32, 33}. For example Hiew et al.\textsuperscript{25} found that trait resilience usually developed in the late childhood and became the part of a person’s personality. Similarly, another research provided the evidence that trait resilience was associated with positive emotions and longevity\textsuperscript{34}, thus concluding that people with high trait resilience are less vulnerable to psychopathology and they can successfully face the adversities. The present findings are therefore consistent with the literature as the patients with conversion disorder had lower trait resilience as compared to the control group.

As previously discussed, psycho-pathology and vulnerability have been investigated in relation to mental health and such findings suggested a negative relationship of trait resilience with mental health\textsuperscript{35}. Another research also supports this notion that individuals with low trait resilience are more vulnerable to the psychological problems related to stress\textsuperscript{36}. Further, the present finding can be attributed to the etiology of conversion disorder in which psychological distress and lack of problem-focused coping are considered to play a foremost role in the development of low trait resilience in the patients with conversion disorder. Moreover, psychosocial factors associated with conversion disorder, might be the reason, for example, Aamir et al.\textsuperscript{18} asserted that conversion disorder had been associated with some specific characteristics, like being female, low socio-economic status, psychological conflicts, personality disorders or depression. Moreover, it was found that there was no difference between the inter-trait resilience in both the groups; however, the intra-trait resilience of the participants with general medical conditions was higher than those with conversion disorder. As mentioned earlier, the intra-trait resilience is concerned with the personal traits of an individual, so the results are consistent with the previous findings that personality traits like conscientiousness and extraversion are positively related to the mental health\textsuperscript{37}.
As far as the coping strategies are concerned, the results of the study showed that the participants with general medical conditions were employing the active-practical coping strategies more than the participants with conversion disorder. These findings are consistent with the available researches on stress, coping and the relationship of coping with psychological wellbeing. For example, a research conducted by Hatchett & Park found that problem-focused coping and optimism were correlated positively with each other and were associated with the better psychological outcomes. Furthermore, the results also signposted that the patients with conversion disorder were using avoidance focused coping strategies more than the patients with general medical condition. Avoidance focused coping or emotional avoidance is the push away or avoidance of one’s own emotions. The participants with conversion disorder mostly avoid or suppress their conflicts or stresses which are ultimately converted into physical symptoms. Abundant literature has been available which supports that avoidance focused coping leads to the development of psychopathology and is associated with psychological stress and poor wellbeing. A research was conducted by Maqbool & Kausar in which the patients with conversion disorder were reported to use avoidance focused coping strategies and active-distracting coping strategies in order to cope with their stress. Moreover, another finding indicated that avoidance focused coping was one of the factors which predicted the maintenance and persistence of somatoform disorders.

Conclusion

The results of our study suggest that avoidance-focused coping strategies and low trait resilience seem to be important phenomena in the onset of conversion disorder. This research has important implications in devising therapeutic interventions for the patients with conversion disorder and their families. However, our study also had some limitations. The first shortcoming of the study was that the number of participants included in the research was limited due to the time bound nature of the study. In order to increase the statistical significance and generalizability of the research, the sample size should be increased for prospective researches. Moreover, the duration of illness as well as the type of conversion disorder was not known and the patients with variation in the duration of illness and with all types were included in the study. Future researches should take these factors into account as correlating the results with the types of conversion disorder may open future avenues for research in this area.

Acknowledgments

I would like to express my sincere gratitude to the patients who participated in this research. I also want to thank my supervisor and co-author of this research, Dr. Iram Zehra Bokharey for her valuable guidance, support and technical assistance throughout the process of completion of this research. Moreover, I want to express my sincere gratitude to my parents and beloved uncle, Mr. Zulfiqar Ali Bhatti for their support and help in the completion of this thesis.

References


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University of the Punjab
Lahore, Pakistan

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**Email:** qahmad9@gmail.com
Neurotic Personality Traits and Depression among First Year Medical and Dental Students in Universiti Sains Malaysia

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Abstract

Objective: This study aims to evaluate the association of neurotic personality traits and coping styles with depression amongst first year medical and dental students. Methods: A total of 167 students consisting of 133 medical and 34 dental students in their first year were recruited. All the subjects were assessed using BDI, NEO PI-R (N) and Brief COPE for depression, neurotic personality traits and coping styles respectively. Result: First year dental students were 3 times more likely to have depression than first year medical students. Students who scored high and very high on the total Neuroticism factor and the Depression facet of NEO PI-R (N) were 3.6 times and 7 times more likely to have depression than students who scored very low, low or average for the above scales. All coping styles and other socio-demographic factors showed no association with depression. Conclusion: Neurotic personality traits are significantly associated with depression. NEO PI-R (N) proved to be a useful tool to evaluate the neurotic traits among medical and dental students allowing early interventional measures to those who need it.

Keywords: Neurotic Personality Traits, Depression, Coping Style, Medical Student, Dental Student

Introduction

It is well known that the neurotic personality trait is a premorbid risk factor for developing a depressive disorder\(^1\). People who score high in neuroticism are emotionally reactive and susceptible to stress. They are more likely to interpret normal events as threatening, and trivial frustrations as hopelessly unmanageable. Their negative emotional reactions are more likely to persist for unusually long periods of time, which implies that they are regularly in a bad mood. There is a significant association between neuroticism and depression\(^2\). Individuals with high neuroticism reacted more negatively to the stressors and were more vulnerable to the recurrence of the same stressors\(^3\).

Coping styles have been shown to be a significant contributor to the development of depression\(^4,5\). Problem-focused coping appears to be the most adaptive coping style
as it is associated with alleviated psychological distress. Avoidant coping seems to be the most maladaptive as it is associated with increased distress\textsuperscript{4-10}. The emotion-focused coping have mixed results as this coping style has been associated with both increased and decreased levels of psychological distress\textsuperscript{4-9,11}.

Previous studies have shown that one eighth to one quarter of medical students were depressed\textsuperscript{12-14}. First year medical students were found to be under more intense pressure and stress particularly when compared with final year medical students\textsuperscript{15}. They seemed to be more heavily burdened by the academic curriculum, and the perceived stress might be the result of the process of adjusting to life in the new educational settings. The prevalence of depressive disorders amongst first year medical students doubled between the beginning and the end of their first year\textsuperscript{16,17}.

Similarly in Malaysia\textsuperscript{18}, the prevalence of psychological stress is highest among first year medical students at 48.6\% and 4th year at 48.7\%, followed by 5th year at 41.4\%, 2nd year at 39.7\% and 3rd year medical students at 29.8\%. In another study\textsuperscript{19} 46.2\% of medical students suffer from emotional disorders.

Realizing the importance of this issue, this study was conducted to evaluate the association between neurotic personality traits and coping styles with depressive symptoms among first year medical and dental students. Personality traits are relatively stable over time. In contrast, coping styles are less stable as they may change as the students mature and learn to adapt. Evaluating personality traits and coping styles allows for early identification of those who are vulnerable to develop depression whether now as a student or later on after graduating from medical school.

**Methods**

**Subject**

A total of 167 out of 257 first year (208 medical and 49 dental) students from Universiti Sains Malaysia (USM) were enrolled into the study after signing the consent form. This was 64\% (133) and 69\% (34) of first year medical and dental student respectively. In USM, the curriculum is such that both medical and dental students were in the same class for the first 3 years of their course work. In addition, dental students are also required to attend dental practical. Altogether there were 257 first year students. Amongst the 208 medical students, 176 were new and 32 were repeat students. Amongst the 49 dental students, 40 were new and 9 repeat students.

**Assessment**

The Revised NEO Personality Inventory (NEO PI-R) measures the 5 domains of personality and 30 more specific facets, with 6 facets hierarchically structured under each of the 5 domains. The inventory includes 240 items, with 8 items per facet, with domain scale scores computed through aggregation of its composing facets. Only the Neuroticism factor was assessed in this study. The item response scale ranged from 1 (strongly agree) to 5 (strongly disagree). The results were summarized in terms of 5 levels: very low, low, average, high, and very high. The cut-off score between high and average for anxiety, angry/hostility, depression, self-consciousness, impulsiveness and vulnerability to stress are 17, 16, 16, 17, 16 and 13 respectively.

The brief COPE consists of 28 items with response scale ranged from 1 (never) to 4 (frequently). It measures 14 coping
responses grouped under 3 domains which are problem-focused (active coping, use of instrumental support, planning, and positive reframing), emotion-focused (use of emotional support, venting, humor, acceptance and religion) and avoidant coping (self-distraction, denial, substance use, behavioral disengagement and self-blame)\(^2\).

The Beck Depression Inventory Second Edition (BDI-II) is a 21-item self-reported tool aimed to assess the presence and severity of symptoms of depression. When presented with the BDI-II, the students were asked to consider each statement as it relates to the way they have felt for the past two weeks. It is a good instrument for screening depressive disorders in community surveys. The predictive value of the selected cut-off point (12/13) was 100% sensitivity, 99% specificity, 0.72 PPV, 1 NPV, and 98% overall diagnostic value\(^2\).

All questionnaires were given at one sitting to all the students after explaining the study protocol during the rest time between two lectures in May 2011 by the first author. Students with a known severe mental disorder were excluded from the study.

**Statistical Analysis**

Pearson chi-square test and Fisher exact test were used to compare socio-demographic characteristic between medical and dental groups. To further analyze the data, a series of hierarchical regression analyses were conducted. All the analyses were done using SPSS 17.0 for Windows.

**Results**

A total of 167 subjects (128 medical students and 39 dentistry students) were successfully recruited for analysis. The high number of non-responders (about 35% of 257 students) may be due to the timing of recruitment which was done in between lectures when some of the students may have gone for tea break.

Depression among the first year medical and dental students was 18.8% and 41.2% (p=0.011) respectively which was statistically significant. Otherwise, as shown in table 1, variables such as batch, gender, race, religion, hometown, family history of mental illness and financial aid between the medical and dental students were no different.

**Table 1. Characteristics of first year medical and dental students**

<table>
<thead>
<tr>
<th></th>
<th>Student Type</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Medical</td>
<td>Dental</td>
</tr>
<tr>
<td>Student Batch</td>
<td></td>
<td></td>
</tr>
<tr>
<td>New</td>
<td>118(80.3%)</td>
<td>29 (19.7%)</td>
</tr>
<tr>
<td>Repeat</td>
<td>15(75.0%)</td>
<td>5 (25.0%)</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>30 (85.7%)</td>
<td>5 (14.3%)</td>
</tr>
<tr>
<td>Female</td>
<td>103(78.0%)</td>
<td>29(22.0%)</td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Malay</td>
<td>63(77.8%)</td>
<td>18 (22.2%)</td>
</tr>
<tr>
<td>Non-Malay</td>
<td>70(81.4%)</td>
<td>16 (18.6%)</td>
</tr>
<tr>
<td>Religion</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Muslim</td>
<td>66(77.6%)</td>
<td>19 (22.4%)</td>
</tr>
<tr>
<td>Non-Muslim</td>
<td>67(81.7%)</td>
<td>15 (18.3%)</td>
</tr>
<tr>
<td>Hometown</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kelantan</td>
<td>17(85.0%)</td>
<td>3(15.0%)</td>
</tr>
<tr>
<td>Other States</td>
<td>116(78.9%)</td>
<td>31 (21.1%)</td>
</tr>
<tr>
<td>Family History of Mental Illness</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Negative</td>
<td>125(79.6%)</td>
<td>32 (20.4%)</td>
</tr>
<tr>
<td>Positive</td>
<td>7(77.8%)</td>
<td>2(22.2%)</td>
</tr>
</tbody>
</table>
Simple logistic regression (Table 2) showed 1 socio-demographic characteristic (i.e., type of student), 3 coping styles (i.e., venting, denial and self-blame), and all NEO facets except impulsivity were the potential associated factors for depression. Further analysis with multiple logistic regressions (Table 3) was performed. Only type of student, NEO depression facet and NEO neuroticism factor remained significantly associated with depression.

**Table 2.** Associated factors of Depression among First Year Medical and Dental Students by Simple Logistic Regression Model

<table>
<thead>
<tr>
<th>Variables</th>
<th>Regression Coefficient (b)</th>
<th>Crude Odds Ratio ( 95% CI )</th>
<th>Wald Statistic</th>
<th>p-value</th>
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<td>Type of student</td>
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<td>Medical</td>
<td>0</td>
<td>1</td>
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<td></td>
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<tr>
<td>Dental</td>
<td>1.107</td>
<td>13.024 (1.346 , 6.796)</td>
<td>7.174</td>
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<tr>
<td>Student Batch</td>
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<tr>
<td>New</td>
<td>0</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Repeat</td>
<td>0.660</td>
<td>1.935 (0.713, 5.254)</td>
<td>1.678</td>
<td>0.195</td>
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<tr>
<td>Gender</td>
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<td></td>
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<tr>
<td>Male</td>
<td>0</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>-0.163</td>
<td>0.850 (0.359, 2.009)</td>
<td>0.138</td>
<td>0.711</td>
</tr>
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<td>Race</td>
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<td></td>
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<td></td>
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<tr>
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<td></td>
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<td>Chinese</td>
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<td>0.599 (0.275, 1.304)</td>
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<td>0.196</td>
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<td>0.868</td>
<td>2.381 (0.658, 8.621)</td>
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<td>0.186</td>
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<td>-1.088</td>
<td>0.337 (0.072, 1.581)</td>
<td>1.902</td>
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<td>Buddhist</td>
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<td>0.690 (0.305, 1.561)</td>
<td>0.795</td>
<td>0.373</td>
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<td>Hindu</td>
<td>0.075</td>
<td>1.078 (0.195, 5.951)</td>
<td>0.007</td>
<td>0.931</td>
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<td>Others</td>
<td>0.028</td>
<td>1.348 (0.117, 15.583)</td>
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<td>Hometown</td>
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<td>Other Pen. States</td>
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<td>0.903 (0.302, 2.705)</td>
<td>0.033</td>
<td>0.856</td>
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<td>East Malaysia</td>
<td>0.035</td>
<td>1.250 (0.292, 5.348)</td>
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<td>0.764</td>
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<td>Financial aid</td>
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<tr>
<td>Positive</td>
<td>-0.723</td>
<td>0.485 (0.177, 1.335)</td>
<td>1.961</td>
<td>0.161</td>
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<td>Family history of mental illness</td>
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<td></td>
<td>Never/Rarely</td>
<td>Occasionally/Frequently</td>
<td>Beta (95% CI)</td>
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<tr>
<td>--------------------------</td>
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</tr>
<tr>
<td>Negative</td>
<td>0</td>
<td>1</td>
<td>-0.938</td>
<td>0.391 (0.047, 3.231)</td>
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<tr>
<td>Positive</td>
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<td>1</td>
<td>-0.095</td>
<td>0.909 (0.424, 1.951)</td>
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<td>Active Coping</td>
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<td>0.305</td>
<td>1.357 (0.366, 5.027)</td>
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<td></td>
<td>-0.095</td>
<td>0.909 (0.424, 1.951)</td>
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<tr>
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<td>1</td>
<td>-0.938</td>
<td>0.391 (0.047, 3.231)</td>
</tr>
<tr>
<td>Occasionally/Frequently</td>
<td>0.305</td>
<td>1.357 (0.366, 5.027)</td>
<td>0.208</td>
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<tr>
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<td>1</td>
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<tr>
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<tr>
<td>Never/Rarely</td>
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<td>0.857</td>
<td>2.355 (0.663, 8.364)</td>
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<tr>
<td>Occasionally/Frequently</td>
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<td>0.844 (0.392, 1.817)</td>
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<td>0.665</td>
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<td>Emotional support</td>
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<td>0.857</td>
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<td>0.665</td>
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<tr>
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<td>1.114 (0.532, 2.333)</td>
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<td>0.121</td>
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<tr>
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<td>1.128 (0.298, 4.266)</td>
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<td>1.055 (0.416, 2.675)</td>
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<td>Occasionally/Frequently</td>
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<td>0.053</td>
<td>1.055 (0.416, 2.675)</td>
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<td>1</td>
<td>0.838</td>
<td>2.313 (0.944, 5.667)</td>
</tr>
<tr>
<td>Occasionally/Frequently</td>
<td></td>
<td></td>
<td>0.838</td>
<td>2.313 (0.944, 5.667)</td>
</tr>
<tr>
<td>Denial</td>
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<tr>
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<td>1</td>
<td>0.976</td>
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</tr>
<tr>
<td>Occasionally/Frequently</td>
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<td></td>
<td>0.976</td>
<td>2.654 (1.037, 6.794)</td>
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</tr>
<tr>
<td>Occasionally/Frequently</td>
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<td></td>
<td>-20.022</td>
<td>0.000 (0.000, 0.000)</td>
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<td>Behavioural Disengagement</td>
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<tr>
<td>Never/Rarely</td>
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<td>-0.017</td>
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<td>Occasionally/Frequently</td>
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<td>0.983 (0.257, 3.767)</td>
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<td>Self-blame</td>
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<td>Never/Rarely</td>
<td>0</td>
<td>1</td>
<td>1.264</td>
<td>3.540 (1.681, 7.456)</td>
</tr>
<tr>
<td>Occasionally/Frequently</td>
<td>1.264</td>
<td>3.540 (1.681, 7.456)</td>
<td>11.062</td>
<td>0.001</td>
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Table 3. Associated factors of Depression among First Year Medical and Dental Students by Multiple Logistic Regression Model

<table>
<thead>
<tr>
<th></th>
<th>Regression Coefficient (B)</th>
<th>Adjusted Odds Ratio (95% CI)</th>
<th>p value</th>
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</thead>
<tbody>
<tr>
<td>Student Type</td>
<td>1.120</td>
<td>3.1 (1.12, 8.36)</td>
<td>0.029</td>
</tr>
<tr>
<td>NEO Depression facet</td>
<td>1.944</td>
<td>7.0 (2.27, 21.49)</td>
<td>0.001</td>
</tr>
<tr>
<td>NEO Neuroticism factor</td>
<td>1.292</td>
<td>3.6 (1.26, 10.50)</td>
<td>0.017</td>
</tr>
</tbody>
</table>

There is no multicollinearity between variables since correlation is < 0.9, ie. (-0.844), (-0.236) and (-0.368) for Type of Student, Depression facet of NEO and Total NEO Neuroticism factor respectively. Model is satisfactory as Hosmer-Lemeshow Goodness-of-fit showed p value 0.764 which is > 0.05. Overall percentage of 79.6% (>70%) indicates that this model is significant. ROC Curve: Area under ROC curve is 0.839 (> 0.7) indicates that findings are significant.
In summary, the dental students have 3.1 times the odds (chance) to develop depression compared to the medical students when other confounders were adjusted. Students who scored high and very high on NEO depression facet of have 7.0 times the odds (chance) to develop depression compared to students scored average, low or very low when other confounders were adjusted. Students who scored high and very high on NEO neuroticism factor have 3.6 times the odds (chance) to develop depression compared to students scored average, low or very low when other confounders were adjusted.

Discussion

Although attending university is generally viewed as a positive experience, which offers many new opportunities, it nonetheless sometimes involves a stressful period of adaptation for students. They have to adapt to the demands of this new situation, whether it be their living conditions, different style of teaching, their lifestyle or responsibilities. For a large majority of students, going to university is also the first time that they spend a long, often definitive, period away from their families. These changes may produce a high stress level that supports the onset of psychological problems.

This study found depression was present in 18.8% and 41.2% (p=0.011) of first year medical and dental students respectively. This finding corresponds to the prevalence from a previous longitudinal cohort study in Newcastle, England by Newbury-Birch et al, 2002 which discovered that 47% of the dental student cohort as second year students, 67% as final year students and 16% as dentists suffered from possible pathological anxiety, compared with 47%, 26% and 30% in the medical student cohort22. A greater proportion of dental students were similarly found to be drinking at hazardous levels at all three time-points in their 2nd year, final year and as dentists, compared with medical students. The proportion of dental students in Newcastle drinking above the recommended low risk limits of alcohol declined from 47% as second year students to 25% as final year students and then it increased to 41% as qualified dentists, while in medical students it steadily increased over the three time points of the survey at 33%, 43% and 54%22. This may also indicate the academic stress and workload amongst dental is higher during the beginning of their course whereas stress among medical students becoming increasingly high during their final year and as interns.

When all the independent variables were entered into the multiple logistic regression equation, no association could be found between depression and other socio-demographic variables such as student batch, gender, race, religion, hometown, family history of psychiatric illness and financial aid.

Coping styles have been associated with depression. However in this study, all coping styles were found to have no association with depression whether inversely or otherwise. The absence of the association between depression and certain coping styles may be considered as negating important confounders with regards to proving that only neurotic personality traits are associated with depression, regardless of whichever coping styles applied in one’s life. The results of this study failed to replicate the findings from previous studies such as the 10 year longitudinal study by Holahan et al, 200523 that avoidant coping was positively associated with depressive symptoms, and Wijndaele et al, 20075 which
claimed that problem-focused coping tend to reduce symptoms of stress, anxiety and depression, compared to subjects who used other coping styles.

Neurotic personality traits when measured with NEO PI-R are subdivided into 6 facets comprising of anxiety, anger/hostility, depression, self-consciousness, impulsivity and vulnerability. In this study, all the facet are not associated with depression except the depression facet whereby students who scored high or very high on the depression facet of NEO PI-R were 7 times more likely to develop depression as compared to students who scored very low, low or average on this facet. This indicates that the depression facet among all neurotic personality traits is strongly and specifically associated with depression. This finding is partially similar to the discovery by Chioqueta et al, 2005 which revealed that depressive symptoms were positively predicted by the anger/hostility and depression facets. However in this study, anger/hostility was not found to be associated with depression.

The NEO Neuroticism factor (meaning the overall neurotic personality traits) was found to be significantly associated with depression whereby students who scored high or very high for the total score of NEO Neuroticism factor have a 3.6 times risk of developing depression as compared to students who scored very low, low or average on that scale. The positive association found between overall Neuroticism and depressive symptoms were in agreement with results from previous studies.

In conclusion, after controlling for socio-demographics, and coping styles, this study clearly indicates that overall neurotic personality traits and in particular the depression facet of neuroticism is significantly associated with depression amongst first year medical and dental students in USM. An interesting finding in this study was that dental students were significantly more depressed than medical students. A possible reason was that dental students had additional academic burden when compared to medical students. Otherwise, there were no significant differences between their socio-demographic variables.

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CASE REPORT

A Case Series on the Use of Atypical Long Acting Injectable as First-line Antipsychotic Treatment in Malaysia: Who Benefits and How?

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Abstract

Introduction: The use of long acting injectable (LAI) antipsychotics is mainly reserved as the second line treatment when all efforts to ensure patients’ adherence to regular oral medication failed. We aim to describe the common clinical features of patients with schizophrenia who benefited from the use of LAI early in the course of illness. Methods: We report four patients with first presentation of schizophrenia, all of whom were started with atypical LAI antipsychotics without prior history of oral antipsychotic. Results: In all of the cases, short acting major tranquilizers were not administered in the acute phase of psychosis because the patients were not agitated. Beside absence of agitation, other common clinical features observed in the four patients were prominent delusion (rather than hallucination), obstinate refusal of oral medication, good pre-morbid functioning and very poor insight. Interestingly, following the remission of the acute psychotic phase, all showed marked improvement in their insight and had better than expected therapeutic alliance. Discussion: LAI may improve the doctor-patient therapeutic alliance due to its minimal side effects and by ways of increasing the patients’ sense of control and allowing psychoeducation to take place when the patient is ready. We conclude that LAI may be used as the first line antipsychotic treatment in the acute psychotic phase in patients who are non-agitated but have prominent symptom of delusions with poor insight.

Keywords: Antipsychotics, Depot Preparation, Acute Psychosis

Introduction

Long acting injectable (LAI) antipsychotics have long been recognized to benefit the management of chronic psychotic disorders like schizophrenia. Primarily, LAI were developed to address the issue of treatment non-adherence for maintenance therapy of psychotic disorders. For this reason, LAI are usually considered for use in the later course of illness whereby poor compliance is a recurring factor that hinders remission and recovery.
As recommended by the 2009 NICE guidelines\(^3\), oral antipsychotic medication should be offered first for the newly diagnosed patients with schizophrenia, before LAI. LAI should be considered after an acute episode and/ or “where avoiding covert non-adherence to antipsychotic medication is a clinical priority within the treatment plan”\(^4\).

In the acute phase of psychosis, parenteral short acting antipsychotics are commonly administered to control the patients’ agitation and disturbed behaviour. More recently, with the advent of atypical antipsychotics in depot preparation such as intramuscular (IM) aripiprazole, IM risperidone and IM paliperidone, administration of LAIs in the early phase of the illness may have potential benefits due to their advantage of lesser side effects compared to the typical antipsychotics on top of improved delivery of medication as less monitoring is required\(^5\). It may have the capacity for better efficacy for symptom improvement and relapse prevention, thus preserving better functioning and quality of life\(^6\).

In this case series, we described the common clinical features of patients with psychosis who achieved remission after the administration of LAI as the first antipsychotic treatment. We report four patients, all of whom were drug naïve before they were administered LAI following a first presentation. We hypothesized that early administration of LAI atypical antipsychotic might actually improve the patient-doctor relationship in patients with certain clinical presentation.

Case 1

Ms A, a 45 year-old lady, divorcee and beauty salon owner, had delusion of love with a superstar singer who had an untimely death, just prior to the onset of her illness. She believed that the singer was alive and in hiding as he sent her signals of love through telephone messages and internet. She also had persecutory delusion as she believed that the singer conspired against her to cause her having financial problems with her business. She made reports against the late singer to the embassy of the country of the singer’s origin. At the time, she also faced business problems. Her family member observed that she started to make errors in her business and started to become preoccupied with peculiar talk about the superstar. Her pre-morbid functioning was good. She has a strong family history of schizophrenia.

She was brought to see a private psychiatrist who started her on IM risperidone and referred her to our hospital for psychiatric admission. In the ward, she was calm and cooperative despite having very poor insight. Initially, she refused oral antipsychotics. In the second week of her admission, she started to show improvement as she became less convinced in her delusional beliefs. She became aware of her abnormal symptoms and agreed to take daily oral risperidone. The depot injection was discontinued as the patient preferred to take the oral medication. She was compliant with the medication and regularly came for her follow-up clinic since her discharge.

Case 2

Ms B, a 51 year old lady, divorcee and stationery shop owner, had an insidious onset of persecutory delusion of a few years toward her ex-husband and in-laws. She also persistently believed that her ex-husband was having extra-marital affair leading to their divorce. Her psychosis markedly worsened in the following years whereby her persecutory delusion later was extended against her children. She also had delusion of love as she believed that one of her
regular client was sending her messages of love. A month prior to her first psychiatric admission, she developed delusion of control in that she would only eat, drink and pass urine at certain times of the day as the rules were enforced to her by an external force. Physical examination and investigation showed she was weak and dehydrated with hypokalaemia. She was admitted to psychiatric ward, where she continued to refuse meals and oral medication. After rehydration, she was administered IM risperidone. She started to show improvement on day 6 of admission: she reported that the ‘control’ was lifted and started to eat. She became aware of her symptoms and also receptive to treatment. After the second dose of IM risperidone (after 2 weeks from the 1st dose) she complained of oligomenorrhea (secondary to hyperprolactinaemia, serum prolactin was 364iu/L). The treatment was then switched to IM paliperidone but oligomenorrhea persisted. Her treatment was then switched to oral olanzapine 5 mg daily. She had since discharged and been on regular psychiatric outpatient follow-up.

**Case 3**

Ms C, a 36 year-old single lady, a business owner, presented with one year history of persecutory delusion towards her siblings following a failed business venture. She strongly believed that her siblings were jealous of her and sabotaged her to take over her business. She believed that she was secretly monitored by CCTV for over one year. She also strongly believed that a special microchip to monitor her thoughts was inserted into her ear by the treating psychiatrist when she was brought by her family members to the clinic. She refused to take any medication as she believed the psychiatrist was part of the conspiracy team. She however attended her clinic follow up regularly in the hope to have the chip removed. She denied any hallucination or other psychotic symptoms. Her persecutory delusion persisted and she became more preoccupied with the microchip to the extent of requesting the veterinary surgeon to remove it. She was admitted to the ward involuntarily after a physical brawl with her siblings. She agreed to take depot injection of paliperidone as a bargain for her short stay in the ward. Her progress was noted in that she was no longer preoccupied about the microchip after the second administration of LAI in the following month even though she believed the chip was still in place. She agreed the medication has calmed her by reducing the unnecessary thoughts in her mind. She is currently in her sixth month of monthly LAI treatment and just started working as a cashier.

**Case 4**

Ms D, a 35 year-old single lady, a university graduate and unemployed, had a prodromal illness of vague psychotic symptoms which started when she was a university student. Her illness became full blown a few years later as she presented with persecutory delusion related to her belief of having a non-existent business venture in the Middle East. There was inappropriate behaviour of talking to herself, reciting Quran or turning the radio loudly (possibly to alleviate auditory hallucinations), as well as neglect of self hygiene. She was brought for psychiatric treatment and prescribed with different types of oral atypical antipsychotics, which she never took. She was finally hospitalized for aggressive behaviour. In the ward, she refused all forms of treatment except for gastritis as she insisted that was her only problem. With her family’s permission, she was started on risperidone depot injection. She improved and was discharged. Nevertheless, delivering the two-weekly risperidone injections remained a challenge as she
continued to resist the frequent injection. Her treatment was changed to monthly paliperidone injection when it became available in our setting in 2011. She progress well into remission as she became more cooperative with improved insight.

**Discussion**

In this case series, we described four patients with first episode of schizophrenia whom were prescribed atypical LAI as the first antipsychotic treatment. They reported favourable outcomes in their symptoms remission and treatment compliance. The common indication for starting the LAI in these patients was to prevent treatment non-adherence, which was anticipated even in the early phase of their illnesses³.

We observed that all four patients shared a few common clinical features: 1) an obstinate refusal to treatment 2) absence of agitation 3) prominent delusion(s) 4) good pre-morbid functioning and 5) poor insight. Even though two out of four of the patients eventually chose to be on oral maintenance treatment, all the patients eventually agreed on their accord to be on regular medication.

In this case series, all four patients were administered the atypical LAI which was either risperidone or paliperidone. The first patient was on risperidone and later switched to paliperidone. As her insight improved, she chose to be on oral risperidone. The treatment for the second case was switched from risperidone to paliperidone and subsequently to oral olanzapine due to hyperprolactinaemia. Case 3 and case 4 continued to be well on monthly paliperidone. Both risperidone and paliperidone shared a common mechanism i.e. dopamine D2 and serotonin 5-HT2A antagonist with difference in the affinity to the respective receptors⁷,⁸. While the atypical antipsychotic has remarkably less extrapyramidal side effects, a proportion of patients experienced significant metabolic side effects and hyperprolactinaemia, particularly in the long term⁹.

Interestingly, the therapeutic alliance between the patient and the doctor was better than expected. Hypothetically, early administration of LAI might have an added advantage of improving the patient-doctor therapeutic alliance as the treating team was spared the daily struggle of coaxing and monitoring the patient’s medication intake since the patient obstinately refused oral medications. Meanwhile, the patients’ receptiveness to his or her illness may be improved as the psychosis is reduced with LAI administration. The patients might feel in control as they were given the autonomy to take the oral medication when they were ready. This in turn, improves the effectiveness of psychoeducation; which is an integral part of psychiatric management in our setting.

Long term management of schizophrenia aims for full functioning patients’ recovery, achievable by good compliance of maintenance therapy. In realizing this, the route of administration of antipsychotic may play a bigger role than previously thought of. Controlled trial of LAI as first line antipsychotic in combination with psychosocial measure like psychoeducation for indicated patients may provide a more conclusive evidence.

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CASE REPORT

Modified Assertive Community Treatment (ACT) in the Management of Comorbid Mental and Physical Illnesses: A Case Report

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Abstract

The holistic approach of assertive community treatment (ACT) may provide better care and lead to better outcomes in populations with difficult-to-treat comorbid mental and physical illnesses. This paper describes the complex issues in managing a person with multiple chronic medical illnesses who also had comorbid treatment-resistant depression and poor social support. The patient achieved improvement after the implementation of the therapeutic ingredients of ACT.

Keywords: Assertive Community Treatment, Comorbid Physical and Mental Illness, Treatment-resistant Depression

Introduction

Comorbidity rates between depression and physical illnesses are in excess¹. The presence of depression in people with physical illness contributes to poorer prognosis through direct biological factors (e.g. immune suppression) and indirect psychosocial factors (e.g. noncompliance to treatment)². The underlying physical illness can also exacerbate the co-existing depression to the extent of the condition becoming refractory to treatment³ resulting in the increase of medical service utilization and treatment costs⁴.

While the holistic approach of ACT has been proven to be effective in providing services to people with severe mental illness (SMI)⁵, there has been a dearth of research in assessing the impact of ACT on clients with chronic medical illness with comorbid psychiatric conditions. In developing countries, modified ACT, mainly due to inadequate resources, has also been shown to be similarly effective in improving outcomes in people with SMIs⁶. This case report illustrates the complex issues in managing a person with multiple chronic medical illnesses who also had comorbid treatment-resistant depression and poor social support. The impact of modified ACT on this patient and its therapeutic ingredients are discussed.
Case Report

Miss ZA is a 42-year-old single unemployed lady who has been bed-bound since she had a fall and sustained left neck of femur fracture 5 years ago. One year later, she developed major depressive disorder. She had long standing medical illnesses, namely mixed connective tissue disease (rheumatoid arthritis and systemic lupus erythematosus) with atlantoaxial subluxation, iatrogenic Cushing’s syndrome with bilateral hip avascular necrosis, history of recurrent stroke and T4 to T6 spinal compression fracture (treated as spinal tuberculosis) with neurogenic bladder. She had been unemployed for many years and lived in poverty with her old parents. She had transportation problem to come for follow up and was not compliant with all her medications resulting in poor control of her illnesses and frequent hospitalizations.

She clearly had not overcome her grief for the loss of her physical health and the accompanying disabilities. She was constantly feeling angry and had unrealistic expectations on her recovery. She had multiple episodes of drug overdose as either suicide attempt or a way of expressing her frustration. The family was afflicted with increasing burdens, physically, emotionally and financially, with the patient’s increasing disabilities and frustration and the parents’ increasing age and their own medical problems. This manifested in the parents as high Expressed Emotion, resulting in verbal and sometimes physical aggression targeted to the patient which became a vicious cycle as she also directed her anger towards her parents by scolding them with vulgar words whenever they did not attend to her needs promptly.

She was referred to the community psychiatric team of Universiti Kebangsaan Medical Centre (UKMMC) 3 years ago. The team initially had difficulties in optimizing her medications as she coped by taking extra doses of her psychotropic medications whenever she was distressed by either insomnia, joints pain or mother’s critical comments. This problem improved after the community nurse prepared pill boxes for her and engaged her father to supervise her medications. She was planned for regular grief counseling, supportive psychotherapy, behavioural modification and monitoring of her medication intake. The community team visited her weekly to fortnightly to implement these treatment strategies with additional visits upon request whenever they were in crisis. Transportation was provided to send her to the rheumatology clinic for follow-ups. Steroid was given in minimum effective dose just enough to treat her arthritis and avoid exacerbation of her depression. The treating team network was also expanded to include a medical officer from the rheumatology team who would be consulted when she had a flare of arthritis and a counselor to provide more frequent grief counseling. A social worker was included to help renovate her room and create a bath and toilet area to ease her with these basic needs. She was also given a wheel chair to help her be more independent in her daily activities. Furthermore, financial aids from the relevant social agencies were secured to reduce the family’s financial burden.

In this case, apart from optimizing medications, large amount of time was spent in addressing the patient and her family’s emotional and social needs. This has helped the patient and her parents to accept her illnesses and remained engaged in treatment. She was taught adaptive skills such as distraction and prayers in dealing with her feeling of loneliness and worthlessness. Her perception on illnesses was also modified.
that she and her family could view them as a challenge in life to strengthen their faith in religion. Thus, they could learn to cope with more forgiveness and love to each other as a family. One of the turning points in her arduous journey in reaching to a meaningful life was when her previous hobby in knitting was highlighted. With the help of an occupational therapist, she was provided with materials for knitting and encouraged to resume this hobby. Despite having severely deformed bilateral hand joints, she amazingly could still knit table runners that generated some income and helped combat her sense of hopelessness and worthlessness. She found satisfaction and meaning to continue living. Subsequently, her joints pain became less. The family situation was less chaotic and her parents were happier. The companionship and assertive treatment which were provided by the community team had instilled hope in this family; a hope that was lost in the midst of constant struggle with poverty, physical and mental illnesses on top of suffering from marginalization by the society. After 2 years of receiving a modified ACT, her admission was significantly reduced from 13 admissions in two years to none admission in the subsequent year.

Discussion

Mental and physical health are two inextricable entities that should be addressed concurrently in providing care for people suffering from Comorbid medical and mental illnesses. A fragmented health care system may demoralize the patients with this condition and their caregivers. Multidisciplinary approach, integration of services, medication management and psychosocial rehabilitation in ACT model is useful in addressing the significant physical and mental health disparities as well as social difficulties in those with severe comorbidities. The therapeutic ingredients of ACT such as assertive outreach, individualized services, building trusting relationship, solving day to day living problems and providing families with psychoeducation and support restore the clients’ dignity and make life more bearable and meaningful for them.

Despite the challenges faced in implementing ACT in Malaysia, especially lack of resources, that made ACT have to be modified from the standardized western version, comprehensive services could still be delivered to the clients with most complex conditions when available resources are explored and utilized optimally. Innovation, adequate skills, perseverance and team spirit in the community staffs in dealing with the complexities in this reported client as well as utilization of resources from outside the team have proven to be useful in helping the client improve her life. Apart from the innovative quality in health care staffs in making ACT a success for individual patients, governmental commitment in changing mental health policy and legislation in support of this evidence-based clinical intervention is also crucial in bringing the implementation of this intervention to another height.

Acknowledgement

The authors would like to thank all the members of the Community Psychiatric Team of UKMMC for their commitment and dedication in managing this client.

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Abstract

Pseudocyesis seen in non-psychotic woman without true gestation is a common event in developing countries. Pseudocyesis results from multidimensional factors. Our case was a 40 years, Hindu, married, illiterate, non-infertile woman of lower socio-economic status, from rural part of Bengal, India. She presented with amenorrhea, distended abdomen and breast engorgement. Gynecological and radiological examination showed neither pregnancy nor postpartum state. The women had three female children but no male child. There was excessive pressure from husband to have a male child for generational continuity and economic security in old age. Diagnosis of pseudocyesis was made and further sessions with the husband were carried out. She was managed with supportive psychotherapy and low dose of anxiolytic. Conclusion: This psychodynamic change combined with the illiteracy, poverty, disturbed family dynamics, societal pressure and cultural belief caused amenorrhea and all other body changes may mimicking pregnancy.

Keywords: Pathogenesis, Psycho-Socio-Cultural Factor, Gender Preference

Introduction

Pseudocyesis was first described by Hippocrates. John Mason Good coined the term pseudocyesis from the Greek words pseudes (false) and kyesis (pregnancy). In pseudocyesis, a non-psychotic woman believes herself to be pregnant and develops objective findings of pregnancy which may include amenorrhea, abdominal enlargement, breast changes similar to those in pregnancy, apparent fetal movements, softening of the cervix with signs of congestion, nausea, vomiting and weight gain in the absence of true gestation. Pseudocyesis is quite different from ‘delusions of pregnancy’ found in schizophrenia and other psychotic disorders. The term ‘delusions of pregnancy’ rather than ‘pseudocyesis’ should be used in cases that do not have any physical signs of pregnancy but have a false firm unshakable belief of pregnancy. DSM IV TR categorizes it into somatoform disorders not otherwise specified, whereas ICD 10 classifies it as somatoform disorder, unspecified. Pathological ambivalence of pregnancy; conflict regarding gender,
sexuality, or childbearing; a grief reaction following a miscarriage, tubal ligation, or hysterectomy; disturbed family dynamics, excessive societal pressure on women to have a large number of male children are psychodynamic and socio-cultural factors for pseudocyesis. The aim of this report is to highlight the psycho-socio-cultural context of pseudocyesis.

Case Report

A 40 years, Hindu, married, illiterate, woman of lower socio-economic status, from rural part of Bengal, India reported to the G&O (Gynecology & Obstetrics) OPD of North Bengal Medical College, India for antenatal checkup with the complaint of amenorrhea for 32 weeks, distended abdomen, loss of appetite, nausea and vomiting, weight gain and breast engorgement. The women felt foetal movement in last 2 months. Her past history showed that she was having regular menstruation and was not on any drugs or oral contraceptives.

The woman was from a nuclear family. Her husband, a priest remained busy most of time in religious activity which was their only source of income. They had three female children. Their relationship was good after marriage which was gradually deteriorating after the birth of female children that was perceived as a curse with economic and social liability. She was blamed by her husband for giving birth of all three female children and not having a male child for generational continuity and economic security in old age. The woman was overburdened with household work and leading stressful life, wanted to attract attention and sympathy of husband. She really had an immense desire to become pregnant to bring a male child.

Gynecological examination showed soft, diffusely tympanetic, distended abdomen with an inverted umbilicus. Neither fetal part was palpable nor the fetal movements felt. Pelvic examination revealed a nongravid, empty, anteverted uterus with normal pelvic structures. Breast was found to be engorged without pregnancy related changes. Urine for pregnancy test was negative. Laboratory findings including complete haemogram, blood glucose, creatinine, urea, lipid profile, uric acid, electrolytes, LFT, urinary routine examination, pituitary hormones, thyroid profile, testosterone, estrogen and progesterone all were within normal level. Ultra-sonography of whole abdomen was done. The scan showed a nongravid, empty, anteverted uterus with normal pelvic structures. The patient displayed an intense emotional outburst when she was informed of the negative obstetric findings regarding her being pregnant.

At that period she was made referred to psychiatry OPD. Detailed history and mental status examination revealed that she was neatly dressed, conscious, oriented, well communicated and having anxious affect. She spoke coherently. Her thought content revealed a strong belief of being pregnant, but this was considered as an overvalued idea rather than a delusion because she argued that if "confirmatory testing" showed that she was not pregnant, she would accept it. She did not have any hallucinations. The rest of the mental state examination was unremarkable. There was no past and family history of mental illness. According to DSM IV TR diagnostic criteria she was thought to have pseudocyesis based on above clinical presentation.

The woman was reassured that she was experiencing a false pregnancy. She was explained that this situation aroused as a
result of her strong desire to become pregnant for a male child. We advised her to take clonazepam (0.5mg) every night for 2 weeks to reduce anxiety and also bring her husband in next visit. Subsequently, a supportive confrontation was done in which the woman and her husband were informed that she was not pregnant. The negative results of urine for pregnancy test and ultrasound of the uterus were carefully interpreted to convince the patient. Gentle exploration of her life situation was done. Reality–based, problem-solving supportive psychotherapy was given. The husband was advised not to blame her and to take extra care of his wife as well as their children. Then, the women attended for supportive psychotherapy on three occasions, together with her husband. The patient felt well with this treatment. After two months of outpatient therapy, she resumed menses.

Discussion

Pseudocyesis is seen in woman with longstanding infertility who desperately wants to become pregnant. The intense desire for pregnancy and stress of infertility triggers the pituitary gland to secrete elevated hormones, mimicking the hormonal changes of real pregnancy. The cultural attachment to childbirth and procreation among rural people of some society have been explained as emanating from the multidimensional effects of having children for generational continuity, economic security and social support in old age as well as symbols of social status and achievement of the family and mother. In India irrespective of the caste, creed, religion and social status, the overall status of women is lower than men and therefore a male child is preferred over a female child. A male child is considered a blessing and his birth is celebrated as opposed to a female child where her birth is not celebrated and is considered more of a burden. In India women are still having a very low status in their families, majority of them are illiterate and unaware of their rights. They normally fall prey to traditional practices and beliefs. A strong desire for male baby is seen among 75% Indian women after two baby girls. Birth of female child is perceived as a curse with economic and social liability. Desire for male child manifests so blatantly that parents have no qualms about repeated, closely spaced pregnancies, premature deaths and even terminating child before it is born. Even at parity four and above, woman who had no living sons did not want to terminate child bearing. In our society, women always have the apprehension that if they have no male child, her husband may bring a new bride for procreation of male child for social prestige, continuity of generation and for social and economic support in their old age. In these remote parts of the country the low status of women and the inability to negotiate with their family members leads to a lot of social problem. Majority of the women either go into depression or lead a stressful life.

This poor, illiterate, rural woman, mother of three female children, was having the lowest status in family. She was always criticized by her husband for not having a male child. There was economic burden but no social support. The leady was apprehensive and leading stressful life in Patriarchal Societies. She really had a strong desire to become pregnant. The patient believed that she was pregnant at that time and would bring a male child for continuation of family name and economic insecurities.

Stress can really influence the regularity of an ovarian cycle; hence can suppress the menstruation. This woman was going through some stressful situation which
combined with other socio-cultural factors caused amenorrhea and all other body changes mimicking pregnancy. Medication and Reality-based, problem-solving supportive psychotherapy resolved the stressful situation.

Conclusion

Pseudocyesis results from multidimensional factors. More study is needed to explore the psycho-socio-cultural determinants of the illness.

References


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CASE REPORT

Olanzapine in Treatment of Childhood Disintegrative Disorder: A Case Study

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Abstract

Childhood disintegrative disorder (CDD) is a rare pervasive developmental disorder (PDD) defined by a period of normal development for at least 2 years followed by gradual loss of previously acquired skills with regression of developmental and behavioral functioning. We report a child with CDD showing significant improvement after treatment with Olanzapine.

Keywords: Childhood Disintegrative Disorder (CDD), Pervasive Developmental Disorder (PDD), Olanzapine

Introduction

Childhood disintegrative disorder (CDD) is one of the Pervasive Developmental Disorders (PDD)1. CDD is a rare disorder with a reported prevalence of 0.112 to 0.64 per 10,000 although these figures increased in surveys conducted in the last few years3,4. The essential feature of CDD is a distinct regression of developmental and behavioral functioning following a period of apparently normal development for at least 2 years defined in reference to age-appropriate communication, relationships, interactions, and behavioral criteria. The DSM-IV-TR (Diagnostic and Statistical Manual of Mental Disorders, 4th Ed., Text Revised) indicates that the degeneration of mental and physical functioning must include a clinically significant deterioration of formerly acquired skills5. The prognosis is usually very poor and most individuals are left with severe developmental delay especially in language and social skills5,6.

There is no specific pharmacological treatment for the core deficits of this disorder7. Atypical antipsychotics have been reported to be useful for hyperactivity, aggression, and attention deficit in PDD8,9. Risperidone is the best studied medication in treatment of behavioral problems in PDD10.

We hereunder report a child with CDD undergoing treatment with different antipsychotic medications to control behavioral problems who finally responded to Olanzapine (an atypical antipsychotic).

Case Study

The patient was an 8-year-old boy presented with restlessness, irritability, self biting, attention deficit, language regression,
stereotypic behavior, and echolalia at first visit. He was inattentive and uncooperative in interviews. No delusion or hallucination was detected. He had a normal birth history and early milestones with no family history of psychiatric disorder. His cognitive, motor and language development was normal. The disorder started, at the age of 4, with behavioral change such as restlessness, irritability, anxiety, inappropriate laughing and crying, insomnia, and loss of appetite.

His parents reported that gradually he showed inattention, social isolation, language impairment, self talking, stereotypic behavior, enuresis, encopresis and self biting. In the early phase of the disorder, he was visited on October, 2009 by a psychiatrist and treated by Ritaline and Thioridazine for one month and then left the treatment until we visited him on May, 2011. In first visit neurological examination was normal. Brain CT scan showed decrease in white matter density. EEG During the awake state showed some spike discharges without clinical presentation of seizure. Laboratory findings revealed mild anemia (Hb=10.6mg/dl) with high serum level of Glutamine, Glycine, and Ornithine, but thyroid, liver and renal function tests were normal. Also, serum ammoniac, copper, ceruloplasmin and 24- hour urine copper were normal. Karyotype was normal (46XY), as well.

He underwent treatment with Olanzapine 5mg daily, and after one month Imipramine was started for the treatment of his enuresis 25mg daily and continued for two months later. After a three-month follow-up, some symptoms such as hyperactivity, enuresis, stereotypic behavior, self talking and restlessness were controlled. In order to treat other symptoms, Olanzapine was changed to Risperidone 1mg daily and Imipramine was continued. This treatment regimen continued for three months. Apart from other symptoms, inattenttion, hyperactivity, self talking, enuresis, self biting, and restlessness were all controlled. In the third treatment course, we started Olanzapine 5mg daily again and followed him up with 10mg after one month, while other medications remained unchanged. After the three-month follow-up, the patient showed a significant improvement in his symptoms. Hyperactivity, restlessness, self talking, encopresis, enuresis, stereotypic behavior, and self biting decreased significantly while the social interaction and attention improved.

Discussion

We reported illness course and the treatment strategies of one case of CDD in this paper. Early presentation of disorder like irritability, anxiety and progression to severe symptoms including loss of social interaction, inattention, regression in previously acquired cognitive, motor restlessness, and language skills were congruent with literature. Also, our study results are consistent with the findings of the previous literature indicating that there is an increased frequency of both abnormal EEG readings and seizure disorders in individuals diagnosed with CDD as compared to the general population.

There are no fixed guidelines or treatment strategies for management of CDD. A multidisciplinary approach is often required. Seizures which are common co-occurrence in CDD are treated with anticonvulsant medications. Atypical antipsychotics are suggested to be useful for hyperactivity, aggressive and self injury behaviors in patients with PDD.
Our study results showed that Olanzapine is more effective than Aripiprazole and Risperidone in treatment of CDD. The recommended Olanzapine dosage is 10mg daily leading to significant improvement in overall symptoms of CDD including motor restlessness, irritability, hyperactivity, social interaction, language regression, self biting, stereotypic behavior, encopresis, and enuresis. Two previous studies also found some improvement in CDD patients when treated with Olanzapine\textsuperscript{18,19}.

We conclude that children with behavioral problems, motor and language regression resembling CDD may benefit from Olanzapine treatment. Further studies with greater sample size and control group may determine the role of Olanzapine in treatment of this disorder.

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The Neurobiopsychology of Suicidal Behaviors among Persons with Substance Dependence: The Role of Impulsivity

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Abstract

Suicidal behaviors pose a major health challenge to persons with substance dependence (PSD). This article explores impulsivity as a potential determinant of suicide risk among PSD. By examining the neuropsychological and neurobiological factors involved in suicide and substance dependence/abuse, several theories were considered in relation to impulsivity. Laboratory measurements of neurocognitive capabilities combined with neuroimaging technologies, genetic and neurobiological approaches were used to provide insight regarding the potential roles of impulsivity in suicidal behavior among PSD. Our observations, as well as limitations and future research directions are discussed in this paper.

Keywords: Impulsivity, Suicidal Behaviors, Substance Dependence, Substance Abuse, Suicide, Impulse Control

Introduction

The bi-directional relationships between substance dependence and severity of suicidal behaviors are well established. Previous studies have shown that suicidal behavior rates have increased among those suffering from substance dependence¹,², and substance dependence has been found to increase the risk of future suicidal behaviors³-⁵. Impulsivity is a psychological construct often associated with suicidal behaviors and substance dependence, both independently and together¹, ⁶-¹². Substance dependence particularly involving alcohol and other drugs is highly associated with impaired impulse control¹³-¹⁵.

Although defined in many ways, researchers agree regarding the main components of impulsive behavior: (a) poorly conceived action/reaction, (b) premature expression, (c) risky or inappropriate acts, and (d) no consideration of negative consequences¹⁶-¹⁷. The UPPS model¹⁸ uses these components to measure impulsivity based on the Five Factor Model of personality. Based on the model, the UPPS Impulsivity Scale has been developed to explore four facets of impulsivity: urgency, lack of premeditation, lack of perseverance, and sensation seeking. In a recent study involving suicidal drug and alcohol abuse inpatients, researchers observed the effects of a lack of premeditation and negative urgency and found a robust interaction between these
They concluded that any model attempting to understand and predict suicidal behavior should consider these two impulsivity-related domains, both alone and together. Similar findings have been reported for non-suicidal PSD with high scores for dimensions of urgency, lack of perseverance, and lack of premeditation, but not for sensation seeking. These findings indicate that impulsivity plays a more significant role in substance dependence compared to suicidality.

One possible explanation for this is that suicidal acts can be impulsive or non-impulsive. The mechanisms involved in both are also likely to differ. A non-impulsive suicidal act is characterized by hopelessness, internalized anger, and depression. Supported by previous studies, the self-medication model suggests that non-impulsive attempters and completers abuse substance to medicate their depression up to the point where they fail to assess the consequences of overdose. The model however, lacks empirical support.

The impulsive type is more related to aggression, impulse control disorder and conduct disorder. The stress-diathesis model of suicidal behavior explains the dynamics of substance dependence, suicidality and impulsivity. In this model, life events with subjective states and traits interact. Specifically, PSD acts upon reasons for living/suicidal ideation, suicidal planning/intent, and impulsivity, leading to suicidal acts. The model agrees with state-dependent theories, in which impulsivity is seen as the product of cognitive distortion caused or at least influenced by substance use/dependence, resulting in a higher risk of suicide.

Adolescents and adults share similar risk factors associated with suicide, most of which are closely related to emotional burden. For example, researches found that substance dependence is associated with stress and co-occurring psychopathology, leading to a decision of suicide attempt – as a means of coping with an emotional burden. This explanation is supported by many studies which suggest that substance use can distort cognition by exacerbating depressive symptoms and aggressive/impulsive behaviors, particularly among adolescents. In adults, it has been proposed that suicidal behaviors are acts of reactive aggression ‘executed in the midst of distresses’.

Deficits in impulse control may explain why the prevalence of suicide (completion and attempt) in psychiatric patients, either alone or with co-morbid disorders, is significantly higher compared to in the normal population, particularly in those with substance dependence disorder, who are antisocial and with borderline personality disorder. Support for this claim is extensive. Moreover, one study found that polysubstance dependence is significantly associated with attempted suicide, impulsivity and aggression compared to monosubstance dependence. However, the opposite has also been reported; for example, a study compared cocaine and opiate patients who had attempted suicide and who had never attempted suicide using the self-reporting Barratt Impulsivity Scale (BIS) found no significant difference between groups. The research, however, suggested ceiling effects in which high impulsivity associated with samples may mitigate the utility of impulsivity in suicidal behavior assessment for such patients. Another study found that aggressive tendencies are a better predictor of suicidal behavior rather than impulsivity. This speculation may be valid but is difficult to prove since most studies in this area did not.
treat impulse control and aggression as two separate entities.

Thus, this paper reviews the role of impulsivity to increase the understanding regarding the etiopathogenesis of suicidality in PSD. It is very important to understand the role of impulsivity as a predictor of suicidal acts in PSD. This will enable more effective intervention in addiction and substance dependence programs as well as suicidal risk assessment for those with impulse control problems as a prevention measure. Evaluating the neurobiological and psychological mechanisms of suicidal behaviors in PSD is crucial in this process, but not without difficulties. For instance, it is now known that both suicidal behaviors and substance dependence are observed within the same families. Secondly, compared to other biological markers for suicidal acts in substance dependence, dysregulation of the serotonin neurotransmitter system has been the most often-cited mechanism involved. However, how this system mediates impulsivity remains unclear. It is also important to point out here that the scope of substance dependence in this research is focused on substance dependence related to alcohol since only a few number of studies examining the relationship between drug dependence and suicide have been conducted. Additionally, disputes regarding traits and states perspectives between impulsivity and suicidal behaviors particularly among PSD remain unresolved. The scope of suicidality research is rather limited to help solve such disputes because of its dependency on retrospective self-reporting of suicide attempts and family history. Although self-reports are psychometrically established, inexpensive and valid, they require some degree of insight and are insensitive to state-dependent fluctuations in impulsivity. The level of agreement between impulsivity rating scales and laboratory measurements of impulsivity may disagree since they measure different aspects of impulsivity. Self-reporting measures are generally thought to reflect trait-like aspects of impulsivity, whereas laboratory-based measures are viewed as sensitive to state-dependent aspects of this construct. Thus, to generalize one finding with another can be faulty.

Neuropsychological aspects of suicidality in substance dependence disorders

Cognitive behavioral and neuroimaging findings

PSD with a history of suicidal behavior score higher on tests measuring impulsive traits compared to those that have not previously attempted suicide. Unfortunately, cognitive behavioral studies exploring the relationship between impulsivity and suicidality among PSD are rather limited. In one study done by Wojnar and colleagues, a total of 154 inpatients with alcohol dependence were assessed using the Barratt Impulsiveness Scale (BIS), a 30-item valid self-reporting questionnaire that measures impulsiveness as a personality trait. The Impulsiveness Facet of the Personality Inventory-Revised (NEO-PI-R) was also administered to measure the inability to resist cravings and urges, and is not directly related to spontaneity, risk-taking, or rapid decision time. Additionally, a computerized evaluation of inhibitory control, known as the Stop Signal task (a two-choice reaction time task), was also administered to measure behavioral impulsivity. In this task, a stop-signal occurs occasionally to indicate a withheld response. The task essentially tests the ability to stop competing activating and inhibiting processes. According to the cognitive model, an interpretation is made based on
the time it took the subject to react. Longer stop-signal reaction times indicate a higher difficulty to inhibit a response - thus greater impulsivity. The task has high construct validity and the findings were highly correlated with other measures of impulsivity in substance dependence literature8.

The researchers found that 43% of the sample population had attempted suicide, and 62% were impulsive in nature. Multinomial logistic regression analyses showed that non-impulsive suicide attempters scored higher on BIS compared to patients without suicide attempts, and impulsive suicide attempters scored higher on the Stop Signal Reaction Time (SSRT). Factors distinguishing suicide attempters and non-attempters were generally consistent with other findings for individuals with alcohol dependence11, 12, 37; for example, patients with a history of suicide attempts were younger and had severe substance dependence, higher rates of sexual or physical abuse, suicidal family history, and higher levels of impulsivity. Interestingly, the sensitivity of BIS was not sufficient to detect differences between impulsive attempters and non-impulsive attempters, demonstrating the limitation of self-reporting measurements to detect certain aspects of impulsivity in relation to suicidal behavior.

The neural processes involved in response inhibition are relevant to the neuropathology of suicidal symptom in substance dependence. Li and colleagues conducted fMRI during a Stop-Signal Task38. Results showed that subjects with alcohol dependence had longer GO trial reaction times and higher Stop success rates compared to healthy control subjects. In response inhibition, analysis of variance showed that subjects with alcohol dependence had lower left dorsolateral prefrontal cortex (DLPFC) activity than controls. Subjects with alcohol dependence also showed lower activation of the right DLPFC during post-error slowing (PES, an index for post-error behavioral adjustment) than controls. Moreover, lower activity was observed, particularly in the putamen, insula, and amygdala during risk-taking decisions in the Stop Signal test. Indeed, these results provided evidence for altered changes in the brain’s neural activity, affecting impulse control capability in patients with alcohol dependence.

Neuroimaging studies on suicidal patients appear to support this notion. Findings of dysfunction in the prefrontal cortex among suicide attempters indicate lack of impulse control as a mediator or even a predictor for suicidal behavior39-41. Generally, brain areas that have been implicated most frequently in suicide risk are found to overlap with brain areas associated with substance dependence/abuse and thus share similarities in neurobiopsychological characteristics. This suggests that substance dependence and suicidality share or have overlapping mechanisms. Areas involved in substance dependence and suicidality can include frontal cortical areas, DLPFC, orbitofrontal cortex (OFC), ventromedial cortex (VMC), nucleus accumbens, amygdala, hippocampus, and many more. Due to lesions or dysfunction in these areas, impaired neurocognitive abilities have been presented by suicidal populations, independently or together with substance abuse. Executive functions found to be most affected include those closely related to impulse control. These may include decrements in language skills, problem solving, emotional regulation, behavioral inhibition, verbal and non-verbal retention, working memory, and visuospatial performance42, 43.
Substance dependence/abuse and suicide may be regulated by similar processes. A recent study involved SPECT imaging analysis to compare psychiatric inpatients who committed suicide between 10 days and 36 months after the scan with non-suicidal depressed subjects and healthy controls highlighted several findings. Lower regional cerebral blood flow throughout the cortex was observed in suicidal patients compared to in controls. Reduced perfusion was detected in the corpus callosum, cingulate, and anterodorsal cortex, with a very significant area of low activity in the nucleus accumbens extending to the VMC and left and right putamen. Compared to non-suicidal depressed subjects, they found hemisphere asymmetries with increased perfusion in the right insular cortex in suicidal inpatients. Additionally, a significant decrease in the medial PFC and ventral tegmental area (VTA) were observed. These findings identify impulse control impairment and limbic dysregulation in suicide, - two major characteristics consistently found in PSD.

Based on these established neurocognitive and neuroimaging findings, the roles of impulsivity in substance dependence that can lead to suicidal behavior have been postulated. Abnormalities in the frontal cortex, amygdala, hippocampus, nucleus accumbens, and PFC, particularly in the OFC indicate that suicidal patients and substance-dependent groups are likely to have cognitive deficits, including impaired decision-making, lack of problem-solving abilities, negative emotions like hopelessness, and lack of impulse control, – which all may increase the urge to attempt suicide.

In short, neuropsychological and imaging studies have identified neurocognitive deficits in relation to abnormalities in specific brain regions, primarily the PFC, among suicide attempters and PSDs, independently or together. Lack of impulse control or high impulsive behavior appears to play a mediator role or even predictor of suicidal behavior among PSD.

**Limitations of neuropsychological and imaging studies**

First, cross-sectional study designs like Wojnar’s infer problems related to causality since there is no indication of sequential events before, after, or during the onset of suicidal behavior. Prospective and longitudinal studies may be useful for identifying potential variables such as onset, age, and experience or exposure effects related to impulsivity in PSD that are suicidal.

Secondly, as discussed above, the level of agreement between impulsivity rating scales and laboratory tasks of impulsivity can be conflicted, as demonstrated by some of the findings. An additional concern is that some behavioral measurements of impulsivity have not been validated. Thus, the studies may have reliability issues, and interpretation of findings is questionable.

Third, samples used in some studies did not exclude existing co-morbid conditions that may confound cognitive and neuronal functions; for example, one study included late-onset depression inpatients, while the other recruited bipolar disorder patients.

Fourth, because suicidal behavior is a symptom and not a psychiatric disorder, the definition of the impulsive nature associated with suicidal behavior varies greatly. For example, one study defined impulsive attempts based on 30 min interval while another used 1-week intervals and a third study used a shorter interval of 5 min. This
may explain the higher rates of impulsive attempts in some samples.

Finally, few women are recruited in these studies. Most studies focus on male samples. In fact, a low number of women participate in rehabilitation. This may be due to psychosocial obligations as mothers or wives, which may discourage them from participating in clinical studies.

**Neurobiological aspect of suicidality in substance dependence disorders**

**Biogenetic influences**

*Twin and family studies’ findings*

Laboratory studies measuring individuals’ vulnerability to alcohol and other drugs enable clinicians to identify at-risk populations. Such findings reported that the sons of alcoholics represent 4 to 9 times higher risk of developing substance use disorders compared to control subjects. Neuropsychological assessments of these samples show a higher incidence of neurocognitive deficits, particularly in behavioral dysregulation, which is one aspect of impulse control capabilities. Brent and colleagues supported these neuropsychological findings when they found that impulsive aggression could be used to predict familial (parent-child) transmission of suicide attempts, particularly at an early age. Furthermore, a study of alcohol dependence among young people identified a very strong familial link between higher levels of impulsivity or aggression and suicide attempt.

Findings from twin and family studies have been consistent in highlighting substance dependence as a significant predictor of suicide behavior, independently and together, and that both substance dependence/abuse and suicidality are genetically inherited. A study examined mono- and dizygotic twins (MZ and DZ twins) found that suicidal ideation was influenced by additive genetic (36%) and non-shared environmental (64%) effects, while suicide attempt was affected by additive genetic (17%), shared environmental (19%) and non-shared environmental (64%) effects. The study concluded that even without psychiatric disorder and impulsivity influences, the genetic susceptibility specific to both suicidal ideation and suicide attempt in men is possible.

Utilization of twin studies as a tool for studying genetic and environmental interactions towards outcome behavior is highly beneficial. Therefore, more research of monozygotic twins discordant for early substance use and impulsive personality are warranted to explore phenotypic differences in suicidality among PSD.

**Studies of candidate genes**

Neurobiological studies have shown that suicidal behavior, substance dependence, and impulsivity (alone and together) are strongly linked with abnormalities in the serotonergic system. Additionally, serotonin (5-HT) dysfunction has been associated strongly with impulsive/aggressive behaviors which can lead to both substance use problems and suicidal acts. Individual variations among PSD on serotonin may be related to genetic polymorphisms in different enzymes and proteins. Several candidate genes have been identified in relation to serotonergic genes including the serotonin transporter gene (5-HTT), tryptophan hydroxylase (TPH) gene, and the 5-HT1B receptor gene. Recently, the gene for the catechol-O-methyltransferase (COMT) enzyme also has
been shown to be related to degradation of catecholamines.

5-HTT is encoded by a gene located on chromosome 17q12. A polymorphism in this gene (known as 5-HTTLPR) consists of two alleles, long (l) and short (s), has been studied in relation to suicidality. In a study, 103 suicide attempters were followed over a one-year period to measure behavioral impulsivity as a personality trait. The BIS scale was administered to assess lifetime impulsivity history. The results showed that having the short allele increased the risk of subsequent suicide attempts, while the homozygous group or the s/s genotype was more at risk. Furthermore, subjects scoring higher on impulsivity measurements carried the s/s genotype. Subsequent studies confirmed the findings of this study. However, studies examining genotype have generally shown mixed results, indicating the complex nature of the relationship between suicidality and genetic polymorphism of the serotonin transporter gene. Therefore, additional studies examining the links between 5-HTT and impulsivity in suicidal behavior, particularly among PSD, are necessary.

The TPH gene encodes an enzyme involved in serotonin synthesis, which has consistently been associated with substance dependence/abuse and suicidality, particularly the A779C polymorphism type. Furthermore, this gene has been linked to behaviorally impulsive groups and cerebrospinal fluid 5-hydroxyindoleacetic acid (5-HIAA) concentration. 5-HIAA is a major metabolite of serotonin, and decreased levels of 5-HIAA are commonly observed in suicide attempters and completers. For example, Nielsen and colleagues found that the 779C allele is likely to be carried by suicidal impulsive offenders compared to non-suicidal offenders. Despite these findings, this research area is still in its infancy, and additional studies should be conducted to explore the mechanisms involved - before hypotheses can be developed regarding the relationship between 5-HIAA and impulsivity in suicidal behavior, particularly among PSD.

A polymorphism in the 5-HT1B receptor gene has been labeled as 861C. This allele was observed in two independent populations of alcoholics with suicidal history. Support for this, however, has only been demonstrated through animal studies, in which mice lacking the receptor were responded to alcohol and showed increase impulsive/aggressive behavior. The association between the 5-HT1B receptor gene and substance dependence in humans have not been demonstrated.

Because of these limitations and the conflicting findings of previous studies, a review study suggested that impulsivity may not be directly related to serotonergic dysfunction in patients with substance-dependence. The author argued that serotonergic dysfunction can be indirectly caused by alcohol consumption rather than behavioral impulsiveness. Secondly, serotonergic dysfunction may provoke suicidal attempts due to mood variations rather than due to impulsiveness; and finally, the candidate genes may play nonspecific role in increasing suicide attempt risks, regardless of whether substance use disorder has been diagnosed. Nevertheless, it is very clear that serotonin dysregulation plays a role in impulsivity, suicidality, and substance dependency, both independently and together.

Genetic polymorphisms in the dopaminergic system, particularly in genes functioning in
the frontal and limbic structure of the brain, can influence impulsive behavior and decision-making. For example, recent studies identified the COMT gene as a potential contributor to impulsivity, which can lead to suicide, substance dependence, or both. Previous studies have also found that only certain alcoholic subphenotypes are associated with specific COMT variation, suggesting that genes affecting impulsive behavior in substance dependence only interact with other psychiatric disorders with overlapping psychopathology (44), which may include suicidal symptoms. However, few studies examining the COMT have been conducted and additional studies are needed to understand its influence on suicidal risk among PSD.

In summary, although some contrasting findings have been found, biogenetic research involving twin and family studies and studies of candidate genes implicate genes and their components in impaired impulse control, suicidality, and substance dependence. Additional research is warranted to overcome some of the limitations that will be discussed below.

**Limitations of biogenetic studies**

There are some limitations to previous studies. First, there is a lack of adequate control for psychiatric disorders in some studies. There is a clear distinction between genetic predictions of suicidal behavior and genetic influences mediated by psychiatric disorders (substance dependence disorder, bipolar disorders, mood disorders, etc.), leading to an increased risk of suicidality. However, some studies of twins did not make this distinction, leading to unnecessarily complex findings. This concern is backed up by a report stating that some clinical genetic studies have observed that associations between suicidal behaviors and substance dependence are confounded by genetic vulnerabilities and psychiatric co-morbidities affecting both problems and not independently as separate entities.

Furthermore, genetic influences observed in twin studies and similar environmental factors involved in impulsivity leading to suicidal behavior among PSD do not explain variations found, even in monozygotic twins. Recent studies have highlighted the epigenetic mechanisms in which changes in gene expression occur without any altering DNA sequences, while DNA methylation patterns are changed. In the brain, epigenetic changes have been associated with several biological and cognitive processes, including drug dependence, neurodegeneration, learning, and memory. The discovery of epigenetic regulation is still recent, and additional studies are needed to explain epigenetic mechanisms in substance dependence, suicide, and impulsive behavior.

Finally, most relevant neurobiological studies have examined the effects of alcohol dependence on suicidal behavior mediated by impulsivity. These studies highlighted the importance of future research for exploring the effects of other type of drugs such as cocaine and opiates, in suicide behavior and how impulsivity relates to these phenomena.

**Abnormalities in the serotonergic system**

It is now known that hypoactivity of the serotonergic system affects impulsivity levels and the severity of suicidal behavior among PSD. 5-HIAA levels in cerebrospinal fluid and the cerebral cortex with low serotonergic function have been implicated in substance use/dependence, risk of suicidality, and high impulsivity. This has been well-supported through many
animal studies using alcohol. One study further examined impulsive alcoholic offenders and the association between 5-HIAA levels and TPH gene. The study found that 779C allele carriers are more likely to have lower 5-HIAA levels compared to non-carriers. Thus, this study provided dual support for the independent relationships between the TPH gene and 5-HIAA in cerebrospinal fluid. Later, another study found that the 779C allele is more likely to be carried by those who are suicidal compared to those who are non-suicidal.

Fenfluramine challenge was also used to detect serotonin levels, in which fenfluramine (a serotonin agonist) was administered to stimulate serotonin release and inhibit reuptake. Prolactin levels were then measured to examine the degree of serotonin stimulation. In a study, higher decreased prolactin response (and thus low serotonergic activity) was observed in suicide attempters compared to drug-free depressed inpatients and controls. Indeed, results supporting fenfluramine studies have been rather consistent, with only few contrasting findings. More importantly, the PET imaging study confirmed relative hypometabolism in impulsive attempters compared to non-impulsive attempters in the ventral, medial and lateral PFC as examined by fenfluramine challenge.

To date, post-mortem analyses of suicide victims have been limited and reveal inconsistent findings. Using radioligand tracers specific to serotonin transporters, serotonin-1A receptor (5-HT1A), or serotonin-2A receptor (5-HT2A), functional imaging studies enable investigation of the binding index of these tracers to transporters or receptors. For example, samples of brain tissue from suicide completers with alcohol dependence revealed decreased serotonin transporter binding in the hippocampus. Compared to non-alcoholics, 5-HT1A receptors binding was also reduced in alcoholics.

One of the most well known post-mortem studies in this area was conducted by Pandey and colleagues. The study reported higher expression of 5-HT2A receptors, protein, and mRNA in post-mortem brains of teenage suicide victims, specifically in the prefrontal cortex and hippocampus, which are areas that have been associated with emotion, stress, and cognitive functions. However, increased levels of the receptor binding in the nucleus accumbens area was not observed, indicating that a specific mechanism for suicidal behavior exists independently from substance dependency. Nevertheless, this mechanism needs more exploration — and it is possible that impulsivity can be related to the results of these studies. However, because of the non-specific samples used (i.e. drug-free or non-user; co-morbidities, etc.), the findings must be viewed with caution when applied to the drug-dependent population.

**Other possible neurobiological markers**

Dysfunction of the monoamine neurotransmitter system has long been associated with substance dependence and suicidal behavior. Monoamine oxidase A and B (MAO-A and MAO-B) are known as warrior genes due to their strong link with behavioral aggression and impulsivity. Both enzymes are known to be related to alcohol dependence, but exactly how these coding genes affect suicidality remains unknown. One review concluded that MAO is unspecific and unstable as a biomarker for suicidal risk in PSD and that it may indirectly reflect serotonin metabolism due to its involvement in serotonin catabolism.

Vinod and colleagues studied the endocannabinoid system to better...
understand the relationship between substance dependence and suicidal behavior, alone and together\textsuperscript{88}. Their findings suggest that in the ventral striatum (a critical area for drug reward and impulsivity), alcohol dependence is associated with the downregulation of CB1 receptors, while suicide is linked to the receptors’ upregulation. The precise role of the system remains unknown; however, recent findings have suggested an abnormal interaction between the endocannabinoid system and other neurotransmitters system involved in substance dependence, such as the serotonergic, glutamatergic and dopaminergic systems\textsuperscript{89, 90}. Additionally, several animal and human studies also found that dysfunction of the hypothalamic-pituitary-adrenal (HPA) axis is related to the endocannabinoid system, thus strengthening the support for its role in developing impulsivity, substance dependence, and suicidal behavior, independently or together\textsuperscript{89-91}.

Because the nature of suicide is quite complex, it would be useful to consider other novelty biomarkers related to impulsivity and explore indirect relationships they may have with suicide risk among PSD. One such marker that has been recently explored is ΔFosB. Winstanley schematized a framework regarding the role of ΔFosB in substance dependence\textsuperscript{92}. Induction of the FosB gene by repeated cocaine administration may alter neuronal activation, impulsivity and other cognitive performances within the orbitofrontal cortex (OFC). Specifically, repeated exposure of cocaine leads to adaptive processes affecting cortical activity to counteract the excitatory effects of cocaine. Acute cocaine administration leads to tolerance of cognitive dysfunction. During withdrawal, activated inhibitory processes lead to low activity of OFC, which also leads to a decline in cognitive performance and a lack of impulse control abilities. These can lead to suicidal acts. Although not yet proven, this theoretical model is plausible for explaining impulsive suicidality, particularly if the mode is drug overdose.

To conclude, the effects of serotonergic dysfunction in relation to impulsivity have been explored for suicidal risk among PSD. The exact relationships between serotonin with MAO, endocannabinoid receptors, and ΔFosB are unclear. Mixed results in most studies indicate complex pathways of impulse control in both suicidality and substance dependence.

Some limitations of the neurobiological studies

First, most neurobiological studies examining suicidality focus on impulsive types of suicide and suicide attempts. Another method for understanding suicidal behavior among PSD is to explore the neurobiological factors for the non-impulsive suicide and suicide attempts. Both spectrums/dimensions of impulsivity should be examined to assess its role in suicide and substance dependence, independently or together.

Second, researches highlight the difficulties to control psychiatric co-morbidities associated with suicide and substance dependence due to their complex nature. It is impossible to make a causal link due to possible confounding effects.

Third, most studies focus on alcohol compared to other type of drugs. Impulsivity in suicidal behavior among PSD may be significantly more directly influenced by specific drug types.
Finally, although post-mortem analysis of suicide victims offers direct brain sampling of neurotransmitter transporters and receptors, there are reports of rapid alterations in neurotransmitter concentrations post-mortem which may influence findings. This limitation highlights the needs of other investigation methods to support the findings of post-mortem analysis.

**Implications & future directions**

Although the exact mechanisms related to impulsivity in suicidal behavior among alcohol and other drug-dependents are not fully understood, studies have provided several psychological and research implications that are fairly important for mental health professionals. Some implications for managing impulsive-related suicidal behavior among PSD include:

a) Training general practitioners and mental health nurses to ask specific questions regarding suicidal ideation to identify persons at risk. Professionals should incorporate questions that probe impulsivity behavior among PSD when carrying out suicide risk assessment. With this in place, it is hoped that individuals can benefit from specialized prevention and awareness programs.

b) PSD who are at-risk (e.g. PSD with bipolar disorders) or those with a history of suicide attempts and/or history of aggressive/impulsive behavior may require management therapies involving teaching steps on suicidal behavior crisis, provision of problem solving, communication and coping skills, and techniques for managing aggression and impulsive behavior. It is helpful to discuss patients’ perception regarding the connections between their substance dependence problem, impulsivity proneness, and prior suicide attempts with or without CBT in therapy sessions.

c) Novel treatment approaches for suicidal PSD should be focused on emotional regulation. One type of structured cognitive behavior therapy focused on emotional regulation for treating impulsivity associated with suicidality and substance dependence disorder is known as dialectical behavior therapy (DBT). The DBT manual includes teaching the patients problem-solving skills, emotional regulation strategies, interpersonal skills, and distress tolerance. The DBT efficacy for this population has yet to be examined; thus, the approach is only encouraged for PSD with multiple, complex problems rooted in emotional dyscontrol who have not responded to other evidence-based approaches.

d) It is possible that suicidal acts are linked to relapse. Extensive studies have support this notion. One study found that PSD involved in suicidality are more likely to have high levels of impulsivity and depression, which are both significant predictors of relapse. Neurobiopsychological studies have revealed significant impairment of impulse control, emotional regulation, and parts of executive functions in PSD, demonstrating the importance of clinicians conducting routine assessments of suicidality. When the suicidal behavior symptom is recognized, clinicians must be aware of the increased risk of relapse.
as well, and a treatment plan must be formulated accordingly. This includes motivating individuals to undergo relapse prevention using pharmacotherapy intervention, increase therapy-client contacts, and increase the availability of support systems (family & friends).

Questions such as the heterogeneity and potential for subgroups in populations of suicidal PSD, the possibility of changing relationship between substance use and suicidality’s factors over time (e.g. from adolescence to young adulthood), and differences in poly-substance and mono-substance dependence interactions on suicidal behaviors are all related to impulsivity and should be addressed. Future studies should include:

a) Additional neuroimaging studies which focus on the underlying neurobiological and neuropsychological processes leading to suicidal thoughts and acts in PSD by identifying specific brain regions and neural circuits/pathways involved. This method is promising, particularly for evaluating pharmacotherapy and psychotherapy effects over time, i.e. efficacy studies - giving better prediction, prevention, and treatment strategies.

b) Multimodal impulsivity assessments such as the UPPS scale and laboratory tasks are necessary to fully explain the roles of impulsivity in suicidal behavior and substance dependence since previous studies indicate that different measures are useful for measuring different aspects of impulsivity, as the states and traits theories have suggested. These instruments must be scientifically validated to ensure the quality of data and research in this area. Multimodal impulsivity assessments can advance the development of theories and models of impulsivity, suicide and substance dependence, independently or together.

c) Different research designs can provide an increased understanding of suicidal behavior in PSD. Cross-sectional study designs are limited since they assess impulsivity and suicidal risk at a specific time, providing a state-like perspective. Longitudinal designs are more advantageous because they provide extensive information on age, biological, social, and trait-like psychological variations that may influence such behaviors in normal and PSD populations.

d) Future research should explore the roles of impulsivity in the effects and withdrawal states of other drug interactions (e.g. cocaine, cannabis, and opiate) on suicidal behaviors among PSD, since there are currently very limited studies about them.

e) Future research should also investigate neurobiopsychological differences of the impulsive and non-impulsive nature of suicide and protective factors that can prevent high-risk PSDs from engaging in suicidal ideation and behavior. Few studies have examined impulsivity specific to suicidality in substance-dependent groups.
f) Most neurobiopsychological research involves lower numbers of women in their studies and focus primarily on male sample. Li and colleagues claimed that gender differences in cognitive control during the Stop Signal Task were observed in their previous study; however, their findings cannot be generalized to the substance-dependent population due to sample differences. Another study reported that impulsive suicide attempts were more likely to be carried out by women. Based on such findings, gender-specific research in this area should be conducted to understand the role of gender in suicide risk among PSD.

g) Examining past suicidal acts and impulsive behavior to understand the psychopathology of relapse in PSD are useful because of its potential to delegate eclectic-style interventions in suicide and relapses prevention programs.

h) The difficulties associated with suicide research should be addressed. These include the definition of impulsive nature of suicide. Additionally, it is quite difficult to identify PSD at risk due to lack of warning signs given prior to an impulsive suicide attempt, and thus these individuals may be missed. A standardized definition of impulsivity with proper guidelines of warning signs specific to this group should be considered.

i) It is unequivocal that treating substance dependence (a disorder spectrum) and suicidal behavior (a symptom) has been a substantial challenge for both researchers and practitioners, complicated even further by impulsive behavior (another symptom) commonly observed in these groups. Future research is necessary to measure the effectiveness of either single or combined treatment programs for these individuals.

**Conclusion**

The role of impulsivity in substance dependence has long been established in the literature. Impulsivity has also been significantly associated with suicidal behaviors in suicide studies. Thus, suicidal behaviors among PSD may be directly/indirectly influenced by impulsive personality. The neuropsychological and neurobiological studies discussed in this article reveal reasonable support for this claim.

In regards to the neuropsychological aspect, neurocognitive tests have been used to measure impulsive behavior in suicide patients with and without substance dependence problems. Neuroimaging studies have identified many significant overlapping brain areas and neural circuits involved in substance dependence and suicidality, and these studies have implicated impulse control as one of the possible mechanisms.

On the neurobiological aspect, genetic studies involving twin and family studies and studies of candidate genes provided support for the involvement of impulsivity in suicide behavior among PSD, particularly for alcoholics. Serotonergic dysfunction in metabolism, turnover, its transporters, and receptors are possible mechanisms involved in PSD with suicide attempt history. Other possible biomarkers have been considered,
but the exact roles and mechanisms involved are unclear.

There are some limitations in these studies that require further attention. Integrating genetic, behavioral, psychological, and biological aspects of impulsivity, substance dependence and suicidality would be the most approachable way for directing future research.

Acknowledgement

None

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LETTER TO EDITOR

Construction and Development of an Asian Family Scale: The Path and Importance of the Effort

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The escalation in the aspect of social ills especially among Malaysian teenagers in the recent decade has evoked our interest in the need to look at the family dynamic. High prevalence of drug abuse, conduct misacts, truancy, teenage pregnancy and promiscuous behaviour, is the main indicator on the need to conduct family studies.

In Malaysia and generally in Asia, there is no validated family scale that we can use for the purpose of family assessment. The area of child psychology, sociology, family planning and general psychiatry would benefit from this effort. Hence it is important to initiate the effort to establish a validated family scale for our population.

The effort was started in 2006 when a team comprising of researchers from universities and Ministry of Health Malaysia (MOH) tried to adapt the Family Environment Scale (FES) for Malaysian population. The project, namely “Cross-Cultural Adaptation and Validation of Bahasa Melayu Version of The Family Environment Scale (FES) Questionnaire” was financially supported by MOH and Clinical Research Centre Grant. In this endeavour, we translated FES into a Malaysian language and studied the psychometric properties of the translated version. Unfortunately the results obtained were unsatisfactory even though the translation was done strictly according to the guidelines. Retrospective analysis showed that the translation was done properly and the underlying reason for poor outcome was caused by the content factor.

Further analysis proved the concept of Asian family is different from the western. As an example, the ability to express unhappiness to family members is viewed as good in FES but not in Asia. Items in Expressiveness, Independence and Achievement orientation domains resulted in poor factor loadings. Adapting and translating of an existing scale such as from western is an easy approach to establish a validated instrument, but it is not applicable in in the context of family scales.

Hence the need to devise a new scale comes into the picture. In 2011, the effort started and the study was funded by Fundamental Research Grant Scheme. The process consists of 6 stages; domains identification, items identification for each domain, language review, pre-test, pilot study and finally actual validation. The validation stage was rather challenging because we need to take into consideration that there are 3 major ethnic groups with different mother tongues in Malaysia.

The scale consists of 6 domains with 5 items in each domain which gives rise to 30 items in total. In general the psychometric
outcomes are good. The details of the study outcomes will be published upon completion of patent process. The scale is comprehensive and very much tailored to Asian context which emphasizes the traditional and religiosity practices.

Both Malay language and English versions are now ready to be used by any researchers in Malaysia and in Asian region. Further studies are needed to further establish its psychometric properties in different populations in Asia. Further enquiries on the scale can be found at www.iium.edu.my/medicine/mahir.

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